

STN Search

10/810,352

FILE 'HOME' ENTERED AT 14:52:40 ON 15 NOV 2006

=> file .nash

=> s polyunsaturated fatty acid and (schizochytrium or thraustochytrium)

L1 8 FILE MEDLINE
L2 108 FILE CAPLUS
L3 40 FILE SCISEARCH
L4 11 FILE LIFESCI
L5 26 FILE BIOSIS
L6 14 FILE EMBASE

TOTAL FOR ALL FILES

L7 207 POLYUNSATURATED FATTY ACID AND (SCHIZOCHYTRIUM OR THRAUSTOCHYTRIUM)

=> s l7 and (gene or dna or cdna or clon?)

TOTAL FOR ALL FILES

L14 65 L7 AND (GENE OR DNA OR CDNA OR CLON?)

=> s l14 not 2004-2006/py

TOTAL FOR ALL FILES

L21 19 L14 NOT 2004-2006/PY

=> dup rem l21

PROCESSING COMPLETED FOR L21

L22 11 DUP REM L21 (8 DUPLICATES REMOVED)

=> d ibib abs 1-19

L22 ANSWER 1 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:141207 CAPLUS Full-text

DOCUMENT NUMBER: 138:152364

TITLE: Carotenoid- and polyunsaturated
fatty acid-manufacturing
Schizochytrium

INVENTOR(S): Aki, Yasuhiro; Suzuki, Osamu; Ono, Kazuhisa; Shigeta,
Masako; Kawamoto, Shoji

PATENT ASSIGNEE(S): Japan Science and Technology Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003052357	A2	20030225	JP 2001-243436	20010810
PRIORITY APPLN. INFO.:			JP 2001-243436	20010810

AB Carotenoids and polyunsatd. fatty acids are manufactured with Schizochytrium in a seawater medium. The polyunsatd. fatty acids contain mainly docosahexaenoic acid. The carbon sources are selected from glucose, glycerol, and sodium acetate. The nitrogen sources are selected from peptone, sodium nitrate, and potassium nitrate. Taxonomy and phylogenetic position of the Schizochytrium was also determined based on the 18S rRNA gene.

L22 ANSWER 2 OF 11 MEDLINE on STN DUPLICATE 1

ACCESSION NUMBER: 2003377094 MEDLINE Full-text

DOCUMENT NUMBER: PubMed ID: 12911321

TITLE: Biosynthesis of docosahexaenoic acid in Euglena gracilis:
biochemical and molecular evidence for the involvement of a
Delta4-fatty acyl group desaturase.

AUTHOR: Meyer Astrid; Cirpus Petra; Ott Claudia; Schlecker Rainer;
Zahringer Ulrich; Heinz Ernst

CORPORATE SOURCE: Institut fur Allgemeine Botanik, Universitat Hamburg,
Ohnhorststrasse 18, 22609 Hamburg, Germany.

SOURCE: Biochemistry, (2003 Aug 19) Vol. 42, No. 32, pp. 9779-88.
Journal code: 0370623. ISSN: 0006-2960.

PUB. COUNTRY: United States

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English

FILE SEGMENT: Priority Journals
ENTRY MONTH: 200310
ENTRY DATE: Entered STN: 13 Aug 2003
Last Updated on STN: 3 Oct 2003
Entered Medline: 2 Oct 2003

AB Docosahexaenoic acid (DHA) can be synthesized via alternative routes from which only the omega3/omega6-pathways involve the action of a Delta4-fatty acid desaturase. We examined the suitability of *Euglena gracilis*, *Thraustochytrium* sp., *Schizochytrium* sp., and *Cryptocodinium cohnii* to serve as sources for cloning a cDNA encoding a Delta4-fatty acid desaturase. For this purpose we carried out in vivo labeling studies with radiolabeled C22 polyunsaturated fatty acid substrates. *Schizochytrium* sp. was unable to convert exogenously supplied [2-(14)C]-docosapentaenoic acid (DPA, 22:5(Delta)(7,10,13,16,19)) to DHA, while *E. gracilis* and *Thraustochytrium* sp. carried out this desaturation very efficiently. Hydrogenation and alpha-oxidation of the labeled DHA isolated from these two organisms showed that it was the result of direct Delta4-desaturation and not of substrate breakdown and resynthesis. To clone the desaturase gene, a cDNA library of *E. gracilis* was subjected to mass sequencing. A full-length clone with highest homology to the Delta4-desaturase of *Thraustochytrium* sp. was isolated, and its function was verified by heterologous expression in yeast. The desaturase efficiently converted DPA to DHA. Analysis of the substrate specificity demonstrated that the enzyme activity was not limited to C22 fatty acids, since it also efficiently desaturated C16 fatty acids. The enzyme showed strict Delta4-regioselectivity and required the presence of a Delta7-double bond in the substrate. Positional analysis of phosphatidylcholine revealed that the proportion of the Delta4-desaturated products was up to 20 times higher in the sn-2 position than in the sn-1 position.

L22 ANSWER 3 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2004:46429 CAPLUS Full-text

DOCUMENT NUMBER: 140:213773

TITLE: Grouping newly isolated docosahexaenoic acid-producing thraustochytrids based on their polyunsaturated fatty acid profiles and comparative analysis of 18S rRNA genes

AUTHOR(S): Huang, Jianzhong; Aki, Tsunehiro; Yokochi, Toshihiro; Nakahara, Toru; Honda, Daisuke; Kawamoto, Seiji; Shigeta, Seiko; Ono, Kazuhisa; Suzuki, Osamu

CORPORATE SOURCE: Graduate School of Advanced Sciences of Matter, Department of Molecular Biotechnology, Hiroshima University, Higashi-Hiroshima, 739-8530, Japan

SOURCE: Marine Biotechnology (2003), 5(5), 450-457

CODEN: MABIFW; ISSN: 1436-2228

PUBLISHER: Springer-Verlag New York Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Seven strains of marine microbes producing a significant amount of docosahexaenoic acid (DHA; C22:6, n-3) were screened from seawater collected in coastal areas of Japan and Fiji. They accumulate their resp. intermediate fatty acids in addition to DHA. There are 5 kinds of polyunsatd. fatty acid (PUFA) profiles which can be described as (1) DHA/docosapentaenoic acid (DPA; C22:5, n-6), (2) DHA/DPA/eicosapentaenoic acid (EPA; C20:5, n-3), (3) DHA/EPA, (4) DHA/DPA/EPA/arachidonic acid (AA; C20:4, n-6), and (5) DHA/DPA/EPA/AA/docosatetraenoic acid (C22:4, n-6). These isolates are proved to be new thraustochytrids by their specific insertion sequences in the 18S rRNA genes. The phylogenetic tree constructed by mol. anal. of 18S rRNA genes from the isolates and typical thraustochytrids shows that strains with the same PUFA profile form each monophyletic cluster. These results suggest that the C20-22 PUFA profile may be applicable as an effective characteristic for grouping thraustochytrids.

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 4 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:851794 CAPLUS Full-text

DOCUMENT NUMBER: 141:19198

TITLE: Biosynthesis: world trend of marine natural product

AUTHOR(S): Ebizuka, Yutaka

CORPORATE SOURCE: Graduate School of Pharmacy, University of Tokyo, Japan

SOURCE: Sentan Kagaku Shirizu (2003), Volume 5, 44-49.

Maruzen K.K.: Tokyo, Japan.

CODEN: 69EOSF

DOCUMENT TYPE: Conference; General Review

LANGUAGE: Japanese

AB A review. Base sequences of total genomes of important organisms have been determined and genome information plays an important role even in research methods of biosynthesis of natural products involving multistage enzymic reactions. Recently, an alternative route for biosynthesis of terpene natural products, the 2-C-methyl-D-erythritol 4-phosphate (MEP) pathway to isopentenyl diphosphate (common precursor to biosynthesis of terpenes), was discovered, which is completely

different from the well established mevalonate (MVA) pathway. Chalcone synthase (CHS) is a key enzyme for biosynthesis of flavonoids and considered as a plant specific enzyme. However, RppA gene homologous to CHS was found in *Streptomyces griseus* and enzyme coded by the gene was found to produce 1,3,5,8-tetrahydrooxynaphthalene using 5 mols. of malonyl-CoA. 3 RppA-homologous genes are present in genome of *St. coelicolor* and a homologous gene also exists in *Pseudomonas aeruginosa*. Many marine natural products possess specific structures not found in terrestrial animals and pose unique problems, but the most important problem for the study of biosynthesis of marine natural products is to establish who is the true producer of target compound. There are a variety of cases where one compound is produced by one organism or under coexistence with another specific organism or plural number of organisms involved. When biosynthesis is studied in gene level and genome information of a plural number of organisms is involved, difficulty for biosynthesis study of marine natural products is compounded. In spite of these difficult circumstances, steady progress has been made. For example, coexisting bacterium, *Endobugula sertula*, was identified as the true producer of bryostatin 1 isolated from *Bugula neritina*. Gene (snc) cluster involving in biosynthesis of enterocin was cloned from marine *S. maritimus* and expressed in *S. celicolor* to produce enterocin and its analogs. In the cluster are present, gene of cytochrome P 450 which catalyzes Farvorskii-type inversion reaction and phenylalanine ammonia lyase (PAL) which is known to be plant specific enzyme. De novo biosynthesis of unsatd. fatty acids by PKS was studied. Marine bacterium, *Shewanella* sp., was found to produce eicosapentaenoic acid (C20:5 ω 3, EPA) through a pathway completely different from biosynthesis under aerobic conditions. EPA gene of *Shewanella* sp. consisting of 5 ORF protein genes was expressed in *Escherichia coli* to produce EPA under anaerobic conditions. Similar gene cluster was found in marine *Vibrio marinus*. Eukaryotic marine algae *Schizochytrium* is also known to produce polyunsatd. fatty acids, i.e. docosahexaenoic acid (C20:6 ω 3, DHA) and EPA and its genome also contain 11 functional domain homologs of *Shewanella* sp. These marine microorganisms are considered to be primary producers of unsatd. fatty acids in food chain of fish and mammals. This biosynthesis system is expected to be a supply source of unsatd. fatty acids alternative to fish oil.

L22 ANSWER 5 OF 11 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 2002:391342 BIOSIS Full-text

DOCUMENT NUMBER: PREV200200391342

TITLE: Safety assessment of DHA-rich microalgae from *Schizochytrium* sp.: IV. mutagenicity studies.

AUTHOR(S): Hammond, Bruce G. [Reprint author]; Mayhew, Dale A.; Kier, Larry D. [Reprint author]; Mast, Richard W.; Sander, Wayne J.

CORPORATE SOURCE: Monsanto Company, Saint Louis, MO, 63198, USA
SOURCE: Regulatory Toxicology and Pharmacology, (April, 2002) Vol. 35, No. 1 Part 2, pp. 255-265. print.
CODEN: RTOPDW. ISSN: 0273-2300.

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 17 Jul 2002

Last Updated on STN: 17 Jul 2002

AB The purpose of this series of studies was to assess the genotoxic potential of docosahexaenoic acid-rich microalgae from *Schizochytrium* sp. (DRM). DRM contains oil rich in highly unsaturated fatty acids (PUFAs). Docosahexaenoic acid (DHA n-3) is the most abundant PUFA component of the oil (apprx29% w/w of total fatty acid content). DHA-rich extracted oil from *Schizochytrium* sp. is intended for use as a nutritional ingredient in foods. All in vitro assays were conducted with and without mammalian metabolic activation. DRM was not mutagenic in the Ames reverse mutation assay using five different *Salmonella* histidine auxotroph tester strains. Mouse lymphoma suspension assay methodology was found to be inappropriate for this test material because precipitating test material could not be removed by washing after the intended exposure period and the precipitate interfered with cell counting. The AS52/XPRT assay methodology was not subject to these problems and DRM was tested and found not to be mutagenic in the CHO AS52/XPRT gene mutation assay. DRM was not clastogenic to human peripheral blood lymphocytes in culture. Additionally, DRM did not induce micronucleus formation in mouse bone marrow in vivo further supporting its lack of any chromosomal effects. Overall, the results of this series of mutagenicity assays support the conclusion that DRM does not have any genotoxic potential.

L22 ANSWER 6 OF 11 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 2002:174801 BIOSIS Full-text

DOCUMENT NUMBER: PREV200200174801

TITLE: Plumbing the depths of PUFA biosynthesis: A novel polyketide synthase-like pathway from marine organisms.

AUTHOR(S): Napier, Johnathan A. [Reprint author]

CORPORATE SOURCE: IACR-Long Ashton Research Station, Long Ashton, Bristol, BS41 9AF, UK
jon.napier@bbsrc.ac.uk

SOURCE: Trends in Plant Science, (February, 2002) Vol. 7, No. 2, pp. 51-54. print.
ISSN: 1360-1385.

DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 6 Mar 2002
Last Updated on STN: 6 Mar 2002

AB Polyunsaturated fatty acids (PUFAs) are involved in determining the biophysical properties of membranes as well as being precursors for signalling molecules. C20+ PUFA biosynthesis is catalysed by sequential desaturation and fatty acyl elongation reactions. This aerobic biosynthetic pathway was thought to be taxonomically conserved, but an alternative anaerobic pathway for the biosynthesis of polyunsaturated fatty acids is now known to exist that is analogous to polyketide synthases (PKS). These novel PKS genes could be used to direct the synthesis of PUFAs in heterologous hosts, as well as exploiting the combinatorial chemistry of PKSs to make unusual fatty acids.

L22 ANSWER 7 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:660489 CAPLUS Full-text

DOCUMENT NUMBER: 136:98240

TITLE: Identification of a $\Delta 4$ fatty acid desaturase from *Thraustochytrium* sp. involved in the biosynthesis of docosahexanoic (sic) acid by heterologous expression in *Saccharomyces cerevisiae* and *Brassica juncea*

AUTHOR(S): Qiu, Xiao; Hong, Haiping; MacKenzie, Samuel L.
CORPORATE SOURCE: Department of Research and Development, Bioriginal Food and Science Corporation, Saskatoon, SK, S7J 0R1, Can.

SOURCE: Journal of Biological Chemistry (2001), 276(34), 31561-31566

CODEN: JBCHA3; ISSN: 0021-9258

PUBLISHER: American Society for Biochemistry and Molecular Biology

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The existence of $\Delta 4$ fatty acid desatn. in the biosynthesis of docosahexaenoic acid (DHA) has been questioned over the years. In this report the authors describe the identification from *Thraustochytrium* sp. of two cDNAs, Fad4 and Fad5, coding for $\Delta 4$ and $\Delta 5$ fatty acid desaturases, resp. The $\Delta 4$ desaturase, when expressed in *Saccharomyces cerevisiae*, introduced a double bond at position 4 of 22:5(n-3) and 22:4(n-6) resulting in the production of DHA and docosapentaenoic acid. The enzyme, when expressed in *Brassica juncea* under the control of a constitutive promoter, desatd. the exogenously supplied substrate 22:5(n-3), resulting in the production of DHA in vegetative tissues. These results support the notion that DHA can be synthesized via $\Delta 4$ desatn. and suggest the possibility that DHA can be produced in oilseed crops on a large scale.

REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 8 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3

ACCESSION NUMBER: 2001:491184 CAPLUS Full-text

DOCUMENT NUMBER: 135:209932

TITLE: Profile of polyunsaturated fatty acids produced by *Thraustochytrium* sp. KK17-3

AUTHOR(S): Huang, Jianzhong; Aki, Tsunehiro; Hachida, Kazutaka; Yokochi, Toshihiro; Kawamoto, Seiji; Shigeta, Seiko; Ono, Kazuhisa; Suzuki, Osamu

CORPORATE SOURCE: Department of Molecular Biotechnology, Graduate School of Advanced Sciences of Matter, Hiroshima University, Higashi-Hiroshima, 739-8527, Japan

SOURCE: Journal of the American Oil Chemists' Society (2001), 78(6), 605-610

CODEN: JAOCA7; ISSN: 0003-021X

PUBLISHER: AOCs Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB More than 300 strains of microorganisms producing polyunsatd. fatty acids (PUFA) were newly isolated from coastal seawater in the Seto Inland Sea and around Iriomote Island, Japan, by the baiting method. The profiles of PUFA from docosahexaenoic acid (DHA)-producing strains could be classified into four types. A strain, named KK17-3, was chosen for further study owing to its high DHA content (52.1% of total fatty acid) and wide range of PUFA (76.1%) including arachidonic, eicosapentaenoic, and docosapentaenoic acids as well as DHA. Glucose and tryptone were the optimal carbon and nitrogen sources, resp., in a medium with salinity at 75‰ that of seawater. The PUFA contents in polar lipids (22.1% of total lipid), in which the DHA content was 39.3%, were higher than those in neutral lipids and glycolipids. Mol. phylogenetic anal. of 18S rRNA gene sequences showed KK17-3 to be a *thraustochytrid*. It also was observed to possess a life cycle composed of vegetative cells without successive bipartition, zoosporangium, and zoospore stage.

Classification by the chemotaxonomic criterion based on PUFA compns. also supported this assignment.

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L22 ANSWER 9 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:493686 CAPLUS Full-text
DOCUMENT NUMBER: 133:115928
TITLE: Schizochytrium polyketide synthase
genes and transgenic plants for
polyunsaturated long chain fatty acid production
INVENTOR(S): Facciotti, Daniel; Metz, James George; Lassner,
Michael
PATENT ASSIGNEE(S): Calgene, LLC, USA
SOURCE: PCT Int. Appl., 303 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 8
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000042195	A2	20000720	WO 2000-US956	20000114
WO 2000042195	A3	20000928		
W: BR, CA, IL, JP, MX RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
US 6566583	B1	20030520	US 1999-231899	19990114
CA 2359629	AA	20000720	CA 2000-2359629	20000114
EP 1147197	A2	20011024	EP 2000-904357	20000114
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 2000008760	A	20021008	BR 2000-8760	20000114
JP 2002534123	T2	20021015	JP 2000-593752	20000114
PRIORITY APPLN. INFO.:			US 1999-231899	A 19990114
			US 1997-48650P	P 19970604
			US 1998-90793	A2 19980604
			WO 2000-US956	W 20000114

AB The present invention relates to compns. and methods for preparing polyunsatd. long-chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding polyketide synthase (PKS)-like genes required for the polyunsatd. long-chain fatty acid production, including the genes responsible for eicosapentenoic acid production of *Shewanella putrefaciens* and novel genes associated with the production of docosahexenoic acid in *Vibrio marinus* are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more of the PKS-like genes associated with such long chain polyunsatd. fatty acid production. PKS-like genes from *Schizochytrium aggregatum* are also provided. Expression of the PKS-like genes in the plant system permits the large scale production of polyunsatd. long-chain fatty acids such as eicosapentenoic acid and docosahexenoic acid for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of com. quantities of novel plant oils and products.

L22 ANSWER 10 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:241512 CAPLUS Full-text
DOCUMENT NUMBER: 132:262126
TITLE: Fatty acid desaturases of *Mortierella* and the
genes encoding them and their use in the
preparation of polyunsaturated fatty
acids for food use
INVENTOR(S): Mukerji, Pradip; Huang, Yung-Sheng; Parker-Barnes,
Jennifer M.; Das, Tapas
PATENT ASSIGNEE(S): Abbott Laboratories, USA
SOURCE: PCT Int. Appl., 170 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000020602	A2	20000413	WO 1999-US22686	19990929
WO 2000020602	A3	20000817		

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,
 CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
 IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,
 MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
 SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ,
 BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,
 DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,
 CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1998-103110P P 19981005

AB Fatty acid desaturases catalyzing the conversion of oleic acid to linoleic acid, linoleic acid to γ -linolenic acid, or of α -linolenic acid to stearidonic acid are described from *Mortierella alpina*. The genes for the enzymes are cloned for use in their manufacture for the preparation of polyunsatd. fatty acids, e.g. using transgenic microorganisms are described. Methods of purifying the oils and preparing the oils for food products are also disclosed. Fatty acids, and oils containing them, which have been desatd. by a desaturase produced by recombinant host microorganisms or animals are provided. Pharmaceutical compns., infant formulas or dietary supplements containing fatty acids which have been desatd. by a desaturase produced by a recombinant host microorganism or animal also are described. CDNAs for $\Delta 6$ - and $\Delta 12$ -desaturases of *M. alpina* were cloned by random sequencing of members of a cDNA library. The $\Delta 6$ -desaturase appears to be a naturally occurring fusion protein of a desaturase and cytochrome b5. Expression of the cDNAs in a *Saccharomyces cerevisiae* host resulted in changes in fatty acid profiles expected by increasing the levels of activity of these enzymes. Expression in Sf9 cells is also demonstrated. Formulations for food supplements using microbial oils containing polyunsatd. fatty acids are described.

L22 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:795983 CAPLUS Full-text

DOCUMENT NUMBER: 132:31774

TITLE: Engineering polyunsaturated fatty acid production in plants using desaturase-specifying nucleic acids

INVENTOR(S): Mukerji, Pradip; Knutzon, Deborah

PATENT ASSIGNEE(S): Abbott Laboratories, USA

SOURCE: PCT Int. Appl., 45 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9964616	A2	19991216	WO 1999-US13332	19990611
WO 9964616	A3	20000309		
W:	AU, BG, BR, CA, CN, CZ, HU, IL, JP, KR, MX, NO, NZ, PL, RO, SI, SK, TR			
RW:	AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			

AU 9945643	A1	19991230	AU 1999-45643	19990611
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PRIORITY APPLN. INFO.: US 1998-89149P P 19980612
 WO 1999-US13332 W 19990611

AB Claimed are nucleic acid constructs encoding fatty acid desaturases and methods for preparing polyunsatd. long chain fatty acids in transgenic plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding fatty acid desaturases, including $\Delta 5$ -desaturases, $\Delta 6$ -desaturases and $\Delta 12$ -desaturases, are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more desaturases. Expression of the desaturases with different substrate specificities in the plant system permit the large scale production of polyunsatd. long chain fatty acids such as docosahexaenoic acid, eicosapentaenoic acid, α -linolenic acid, gamma-linolenic acid, arachidonic acid and the like for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of com. quantities of novel plant oils and products.

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WEST Search History

DATE: Wednesday, November 15, 2006

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=PGPB; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L2	polyunsaturated fatty acid and (schizochytrium or thraustochytrium) and (gene or dna or cdna or clon\$5)	81
		<i>DB=USPT,USOC,EPAB,JPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L1	polyunsaturated fatty acid and (schizochytrium or thraustochytrium) and (gene or dna or cdna or clon\$5)	19

END OF SEARCH HISTORY

Hit List

First Hit	Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Search Results - Record(s) 1 through 19 of 19 returned.

☐ 1. Document ID: US 7125672 B2

LI: Entry 1 of 19 File: USPT Oct 24, 2006

US-PAT-NO: 7125672

DOCUMENT-IDENTIFIER: US 7125672 B2

TITLE: Codon-optimized genes for the production of polyunsaturated fatty acids in oleaginous yeasts

DATE-ISSUED: October 24, 2006

PRIOR-PUBLICATION:

DOC-ID

US 20040253621 A1

DATE December 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Picataggio, Stephen K.	Landenberg	PA		US
Zhu, Qun Qun	West Chester	PA		US

US-CL-CURRENT: 435/6; 435/254.11, 435/254.2, 536/23.1, 536/23.2, 536/23.74

ABSTRACT:

The present invention relates to fatty acid desaturases and elongases able to catalyze the conversion of linoleic acid (LA) to gamma.-linolenic acid (GLA); alpha.-linoleic acid (ALA) to stearidonic acid (STA); GLA to dihomogamma.-linoleic acid (DGLA); STA to eicosatetraenoic acid (ETA); DGLA to ETA; eicosapentaenoic acid (EPA) to docosapentaenoic acid (DPA); and arachidonic acid (ARA) to EPA. Nucleic acid sequences encoding codon-optimized desaturases and elongases, nucleic acid sequences which hybridize thereto, DNA constructs comprising the codon-optimized desaturase or elongases, and recombinant host microorganisms expressing increased levels of desaturase or elongase are described.

3 Claims, 25 Drawing Figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 23

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Abstracts	Claims	KWIC	Draw D
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☐ 2. Document ID: US 7109019 B2

L1: Entry 2 of 19

File: USPT

Sep 19, 2006

US-PAT-NO: 7109019

DOCUMENT-IDENTIFIER: US 7109019 B2

TITLE: Gene cluster for production of the enediyne antitumor antibiotic C-1027

DATE-ISSUED: September 19, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20040161828 A1

August 19, 2004

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Shen; Ben

Davis

CA

US

Liu; Wen

Beijing

CN

Christenson; Steven D.

Davis

CA

US

Standage; Scott

Herts

GB

US-CL-CURRENT: 435/252.3; 435/252.35, 435/320.1, 536/23.1, 536/23.2, 536/23.7

ABSTRACT:

This invention provides nucleic acid sequences and characterization of the gene cluster responsible for the biosynthesis of the enediyne C-1027 (produced by *Streptomyces globisporus*). The pathway comprises a nonribosomal peptide synthetase (NRPS). Methods are provided for the biosynthesis of enediynes, enediyne analogs and other biological molecules.

7 Claims, 31 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 22

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWC	Draw. De
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☐ 3. Document ID: US 7105491 B2

L1: Entry 3 of 19

File: USPT

Sep 12, 2006

US-PAT-NO: 7105491

DOCUMENT-IDENTIFIER: US 7105491 B2

TITLE: Biosynthesis of enediyne compounds by manipulation of C-1027 gene pathway

DATE-ISSUED: September 12, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20030157654 A1

August 21, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Shen; Ben	Verona	WI		US
Liu; Wen	Madison	WI		US

US-CL-CURRENT: 514/25; 514/8, 530/387.2, 536/17.2, 536/17.9, 536/18.1

ABSTRACT:

This invention provides nucleic acid sequences and characterization of the gene cluster responsible for the biosynthesis of the enediynes C-1027 (produced by *Streptomyces globisporus*). Methods are provided for the biosynthesis of enediynes, enediyne analogs and other biological molecules. This invention also provides enediyne and enediyne analogs biosynthesized by manipulation of the C-1027 gene pathway.

13 Claims, 37 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 28

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Drawing
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☐ 4. Document ID: US 7087432 B2

L1: Entry 4 of 19

File: USPT

Aug 8, 2006

US-PAT-NO: 7087432

DOCUMENT-IDENTIFIER: US 7087432 B2

TITLE: Fad4, Fad5, Fad5-2 and Fad6, novel fatty acid desaturase family members and uses thereof

DATE-ISSUED: August 8, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20020156254 A1

October 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Qiu; Xiao	Saskatoon			CA
Hong; Haiping	Apex	NC		US

US-CL-CURRENT: 435/468; 435/471, 536/23.2

ABSTRACT:

The invention provides isolated nucleic acid molecules which encode novel fatty acid desaturase family members. The invention also provides recombinant expression vectors containing desaturase nucleic acid molecules, host cells into which the expression vectors have been introduced, and methods for large-scale production of long chain polyunsaturated fatty acids (LCPUFAs), e.g., DHA.

19 Claims, 34 Drawing figures
 Exemplary Claim Number: 1
 Number of Drawing Sheets: 24

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 5. Document ID: US 7070970 B2

L1: Entry 5 of 19

File: USPT

Jul 4, 2006

US-PAT-NO: 7070970
 DOCUMENT-IDENTIFIER: US 7070970 B2

TITLE: Elongase genes and uses thereof

DATE-ISSUED: July 4, 2006

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20030177508 A1	September 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		US
Das; Tapas	Worthington	OH		US
Huang; Yung-Sheng	Upper Arlington	OH		US
Parker-Barnes; Jennifer	New Albany	OH		US
Leonard; Amanda E.	Columbus	OH		US
Thurmond; Jennifer M.	Columbus	OH		US

US-CL-CURRENT: 435/193, 435/252.3, 435/252.31, 435/252.33, 435/254.1, 435/254.11,
435/254.2, 435/254.21, 435/254.22, 435/254.23, 435/254.3, 435/254.4, 435/254.5,
435/254.6, 435/320.1, 435/325, 435/348, 435/419, 536/23.2

ABSTRACT:

The subject invention relates to the identification of four genes involved in the elongation of polyunsaturated acids (i.e., "elongases") and to uses thereof. Two of these genes are also involved in the elongation of monounsaturated fatty acids. In particular, elongase is utilized in the conversion of gamma linolenic acid (GLA) to dihomogamma linolenic acid (DGLA) and in the conversion of DGLA or 20:4n-3 to eicosapentaenoic acid (EPA). DGLA may be utilized in the production of polyunsaturated fatty acids, such as arachidonic acid (AA), docosahexaenoic acid (DHA), EPA, adrenic acid, .omega.6-docosapentaenoic acid or .omega.3-docosapentaenoic acid which may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

19 Claims, 58 Drawing figures
 Exemplary Claim Number: 1
 Number of Drawing Sheets: 55

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/M/C	Draw D
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☐ 6. Document ID: US 7067285 B2

L1: Entry 6 of 19

File: USPT

Jun 27, 2006

US-PAT-NO: 7067285

DOCUMENT-IDENTIFIER: US 7067285 B2

TITLE: Desaturase genes and uses thereof

DATE-ISSUED: June 27, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20030167525 A1

September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		US
Huang; Yung-Sheng	Upper Arlington	OH		US
Das; Tapas	Worthington	OH		US
Thurmond; Jennifer	Columbus	OH		US
Leonard; Amanda Eun-Yeong	Columbus	OH		US
Pereira; Suzette L.	Westerville	OH		US

US-CL-CURRENT: 435/71.1; 424/93.21, 435/189, 435/254.11, 435/320.1, 435/325,
536/23.1, 536/23.2, 800/8

ABSTRACT:

The subject invention relates to the identification of genes involved in the desaturation of polyunsaturated fatty acids at carbon 5 (i.e., ".DELTA.5-desaturase") and at carbon 6 (i.e., ".DELTA.6-desaturase") and to uses thereof. In particular, .DELTA.5-desaturase may be utilized, for example, in the conversion of dihomogamma-linolenic acid (DGLA) to arachidonic acid (AA) and in the conversion of 20:4n-3 to eicosapentaenoic acid (EPA). Delta-6 desaturase may be used, for example, in the conversion of linoleic (LA) to gamma-linolenic acid (GLA). AA or polyunsaturated fatty acids produced therefrom may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

16 Claims, 15 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 15

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/M/C	Draw D
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☐ 7. Document ID: US 7067145 B2

L1: Entry 7 of 19

File: USPT

Jun 27, 2006

US-PAT-NO: 7067145

DOCUMENT-IDENTIFIER: US 7067145 B2

TITLE: Use of arachidonic acid for enhanced culturing of fish larvae and broodstock

DATE-ISSUED: June 27, 2006

PRIOR-PUBLICATION:

DOC-ID

DATE

US 20020110582 A1

August 15, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Place; Allen R.	Baltimore	MD		US
Harel; Moti	Baltimore	MD		US

US-CL-CURRENT: 424/439; 424/442, 424/489, 424/498, 424/520, 424/523, 426/1, 426/2, 426/72, 426/805

ABSTRACT:

A method of enhancing a culturing characteristic of fish larvae, including administering to said larvae in a nutritional diet essential fatty acids including DHA and AA in a ratio effective to enhance the culturing characteristic of such fish larvae relative to a corresponding nutritional diet lacking DHA and AA. The culturing characteristic may be at least one of stress resistance, immunoresistance, hatching rate, and growth rate. In a preferred aspect, the DHA and AA together comprise from about 10 to about 30% of total fatty acids in enrichment lipids, and the dietary ratio of DHA: AA is less than 10. The invention also contemplates a method of operating an aquaculture facility, including growing heterotrophic algae and/or fungi in a fermentor under growth conditions therefor, to produce a heterotrophic cellular product containing DHA and AA, and feeding the heterotrophic cellular product and/or one or more components thereof to (i) fish larvae and/or broodstock in the aquaculture facility, or (ii) live food subsequently fed to such fish larvae.

16 Claims, 12 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 12

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 8. Document ID: US 7045683 B2

L1: Entry 8 of 19

File: USPT

May 16, 2006

US-PAT-NO: 7045683

DOCUMENT-IDENTIFIER: US 7045683 B2

TITLE: .DELTA.4-desaturase genes and uses thereof

DATE-ISSUED: May 16, 2006

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20030134400 A1	July 17, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		US
Thurmond; Jennifer	Columbus	OH		US
Huang; Yung-Sheng	Upper Arlington	OH		US
Das; Tapas	Worthington	OH		US
Leonard; Amanda Eun-Yeong	Gahanna	OH		US
Pereira; Suzette L.	Westerville	OH		US

US-CL-CURRENT: 800/298; 435/189, 435/252.33, 435/320.1, 435/410, 536/23.2, 536/23.74

ABSTRACT:

The subject invention relates to the identification of genes involved in the desaturation of polyunsaturated fatty acids at carbon 4 (i.e., ".DELTA.4-desaturase"). In particular, .DELTA.4-desaturase may be utilized, for example, in the conversion of adrenic acid to .omega.6-docosapentaenoic acid and in the conversion of .omega.3-docosapentaenoic acid to docosahexaenoic acid. The polyunsaturated fatty acids produced by use of the enzyme may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

11 Claims, 1 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 29

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
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☐ 9. Document ID: US 7001772 B2

L1: Entry 9 of 19

File: USPT

Feb 21, 2006

US-PAT-NO: 7001772

DOCUMENT-IDENTIFIER: US 7001772 B2

TITLE: Product and process for transformation of Thraustochytriales microorganisms

DATE-ISSUED: February 21, 2006

PRIOR-PUBLICATION:

DOC-ID	DATE
US 20030166207 A1	September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Roessler; Paul G.	San Diego	CA		US
Matthews; T. Dave	San Diego	CA		US
Ramseier; Tom M.	Poway	CA		US
Metz; James G.	Longmont	CO		US

US-CL-CURRENT: 435/471; 435/232, 435/257.2, 435/320.1, 536/23.1, 536/23.2, 536/23.7

ABSTRACT:

Disclosed are nucleic acid and amino acid sequences for acetolactate synthase, acetolactate synthase regulatory regions, .alpha.-tubulin promoter, a promoter from a Thraustochytriales polyketide synthase (PKS) system, and fatty acid desaturase promoter, each from a Thraustochytriales microorganism. Also disclosed are recombinant vectors useful for transformation of Thraustochytriales microorganisms, as well as a method of transformation of Thraustochytriales microorganisms. The recombinant nucleic acid molecules of the present invention can be used for the expression of foreign nucleic acids in a Thraustochytriales microorganism as well as for the deletion, mutation, or inactivation of genes in Thraustochytriales microorganisms.

37 Claims, 6 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 10. Document ID: US 6913916 B1

L1: Entry 10 of 19

File: USPT

Jul 5, 2005

US-PAT-NO: 6913916

DOCUMENT-IDENTIFIER: US 6913916 B1

TITLE: Elongase genes and uses thereof

DATE-ISSUED: July 5, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Das; Tapas	Worthington	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Parker-Barnes; Jennifer M.	New Albany	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Thurmond; Jennifer	Columbus	OH		

US-CL-CURRENT: 435/183; 435/252.3, 435/252.31, 435/252.33, 435/254.11, 435/254.2, 435/254.21, 435/254.22, 435/254.23, 435/254.3, 435/254.4, 435/254.5, 435/254.7, 435/320.1, 435/325, 435/348, 435/4, 435/410, 435/419, 435/69.1, 536/23.2, 800/295

ABSTRACT:

The subject invention relates to the identification of several genes involved in the elongation of polyunsaturated acids (i.e., "elongases") and to uses thereof. At least two of these genes are also involved in the elongation of monounsaturated fatty acids. In particular, elongase is utilized in the conversion of gamma linolenic acid (GLA) to dihomogama linolenic acid (DGLA) and in the conversion of DGLA or 20:4n-3 to eicosapentaenoic acid (EPA). DGLA may be utilized in the production of polyunsaturated fatty acids, such as arachidonic acid (AA), docosahexaenoic acid (DHA), EPA, adrenic acid, .omega.6-docosapentaenoic acid or .omega.3-docosapentaenoic acid which may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

24 Claims, 87 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 82

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 11. Document ID: US 6884921 B2

L1: Entry 11 of 19

File: USPT

Apr 26, 2005

US-PAT-NO: 6884921

DOCUMENT-IDENTIFIER: US 6884921 B2

**** See image for Certificate of Correction ****

TITLE: .omega.-3 fatty acid desaturase

DATE-ISSUED: April 26, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Browse; John A.	Palouse	WA		
Spychalla; James P.	Antigo	WI		

US-CL-CURRENT: 800/281; 435/134, 435/69.1

ABSTRACT:

Recombinant expression of fat-1 gene of Caenorhabditis elegans in a wide variety of cells, including cells of Arabidopsis thaliana and Saccharomyces cerevisiae, produces a polypeptide having .omega.-3 desaturase activity.

19 Claims, 1 Drawing figures

Exemplary Claim Number: 1,2

Number of Drawing Sheets: 3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 12. Document ID: US 6677145 B2

L1: Entry 12 of 19

File: USPT

Jan 13, 2004

US-PAT-NO: 6677145

DOCUMENT-IDENTIFIER: US 6677145 B2

TITLE: Elongase genes and uses thereof

DATE-ISSUED: January 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Leonard; Amanda Eun-Yeong	Gahanna	OH		
Huang; Yung-Sheng	Upper Arlington	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/193, 435/252.31, 435/252.33, 435/254.11, 435/254.21, 435/254.22,
435/254.23, 435/254.3, 435/254.4, 435/254.5, 435/254.6, 435/320.1, 435/328,
435/348, 435/419, 536/23.2

ABSTRACT:

The subject invention relates to the identification of several genes involved in the elongation of polyunsaturated acids (i.e., "elongases") and to uses thereof. At least two of these genes are also involved in the elongation of monounsaturated fatty acids. In particular, elongase is utilized in the conversion of gamma linolenic acid (GLA) to dihomogamma linolenic acid (DGLA) and in the conversion of AA to adrenic acid (ADA), or eicosapentaenoic acid (EPA) to .omega.3-docosapentaenoic acid (DPA). DGLA may be utilized in the production of polyunsaturated fatty acids, such as arachidonic acid (AA), docosahexaenoic acid (DHA), EPA, adrenic acid, .omega.6-docosapentaenoic acid or .omega.3-docosapentaenoic acid which may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

22 Claims, 106 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 91

Full	Title	Citation	Front	Review	Classification	Date	Reference	<u>Sequences</u>	<u>Attachments</u>	Claims	KWIC	Draw. De
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☐ 13. Document ID: US 6635451 B2

L1: Entry 13 of 19

File: USPT

Oct 21, 2003

US-PAT-NO: 6635451

DOCUMENT-IDENTIFIER: US 6635451 B2

TITLE: Desaturase genes and uses thereof

DATE-ISSUED: October 21, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mukerji; Pradip	Gahanna	OH		
Huang; Yung-Sheng	Columbus	OH		
Das; Tapas	Worthington	OH		
Thurmond; Jennifer	Columbus	OH		
Pereira; Suzette L.	Westerville	OH		

US-CL-CURRENT: 435/71.1; 424/93.21, 424/93.7, 435/189, 435/320.1, 536/23.1, 536/23.2

ABSTRACT:

The subject invention relates to the identification of genes involved in the desaturation of polyunsaturated fatty acids at carbon 5 (i.e., ".DELTA.5-desaturase") and at carbon 6 (i.e., ".DELTA.6-desaturase") and to uses thereof. In particular, .DELTA.5-desaturase may be utilized, for example, in the conversion of dihomogamma-linolenic acid (DGLA) to arachidonic acid (AA) and in the conversion of 20:4n-3 to eicosapentaenoic acid (EPA). Delta-6 desaturase may be used, for example, in the conversion of linoleic (LA) to gamma-linolenic acid (GLA). AA or polyunsaturated fatty acids produced therefrom may be added to pharmaceutical compositions, nutritional compositions, animal feeds, as well as other products such as cosmetics.

22 Claims, 7 Drawing figures

Exemplary Claim Number: 16

Number of Drawing Sheets: 7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KWIC	Draw D
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☐ 14. Document ID: US 6566583 B1

L1: Entry 14 of 19

File: USPT

May 20, 2003

US-PAT-NO: 6566583

DOCUMENT-IDENTIFIER: US 6566583 B1

TITLE: Schizochytrium PKS genes

DATE-ISSUED: May 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Facciotti; Daniel	Davis	CA	95616	
Metz; James George	Davis	CA	95616	
Lassner; Michael	Davis	CA	95616	

US-CL-CURRENT: 800/281; 435/252.3, 435/320.1, 435/419, 536/23.2

ABSTRACT:

The present invention relates to compositions and methods for preparing poly-

unsaturated long chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding PKS-like genes required for the poly-unsaturated long chain fatty acid production, including the genes responsible for eicosapentenoic acid production of *Shewanella putrefaciens* and novel genes associated with the production of docosahexenoic acid in *Vibrio marinus* are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more of the PKS-like genes associated with such long chain polyunsaturated fatty acid production. Expression of the PKS-like genes in the plant system permits the large scale production of poly-unsaturated long chain fatty acids such as eicosapentenoic acid and docosahexenoic acid for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of commercial quantities of novel plant oils and products.

36 Claims, 138 Drawing figures
Exemplary Claim Number: 1,27,31
Number of Drawing Sheets: 134

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Drawing
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☐ 15. Document ID: US 6255505 B1

L1: Entry 15 of 19

File: USPT

Jul 3, 2001

US-PAT-NO: 6255505

DOCUMENT-IDENTIFIER: US 6255505 B1

TITLE: Microbial polyunsaturated fatty acid containing oil from pasteurised biomass

DATE-ISSUED: July 3, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bijl; Hendrik Louis	Vlaardingen			NL
Wolf; Johannes Hendrik	Delft			NL
Schaap; Albert	Barendrecht			NL
Visser; Johannes Martinus Jacobus	Amersfoort			NL

US-CL-CURRENT: 554/227; 435/132, 435/134, 435/171, 435/252.1

ABSTRACT:

The present invention discloses a microbial polyunsaturated fatty acid(PUFA)-containing oil with a high triglyceride content and a high oxidative stability. In addition, a method is described for the recovery of such oil from a microbial biomass derived from a pasteurised fermentation broth, wherein the microbial biomass is subjected to extrusion to form granular particles, dried and the oil then extracted from the dried granules using an appropriate solvent.

13 Claims, 4 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 4

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 16. Document ID: US 6194167 B1

L1: Entry 16 of 19

File: USPT

Feb 27, 2001

US-PAT-NO: 6194167

DOCUMENT-IDENTIFIER: US 6194167 B1

TITLE: .omega.-3 fatty acid desaturase

DATE-ISSUED: February 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Browse; John A.	Palouse	WA		
Spychalla; James P.	Antigo	WI		

US-CL-CURRENT: 435/69.1; 435/252.3, 435/419, 435/440, 435/468, 800/281

ABSTRACT:

Recombinant expression of fat-1 gene of Caenorhabditis elegans in a wide variety of cells, including cells of Arabidopsis thaliana and Saccharomyces cerevisiae, produces a polypeptide having .omega.-3 desaturase activity.

4 Claims, 2 Drawing figures

Exemplary Claim Number: 1,3

Number of Drawing Sheets: 2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 17. Document ID: US 6140486 A

L1: Entry 17 of 19

File: USPT

Oct 31, 2000

US-PAT-NO: 6140486

DOCUMENT-IDENTIFIER: US 6140486 A

TITLE: Production of polyunsaturated fatty acids by expression of polyketide-like synthesis genes in plants

DATE-ISSUED: October 31, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Facciotti; Daniel	Davis	CA		
Metz; James George	Davis	CA		
Lassner; Michael	Davis	CA		

US-CL-CURRENT: 536/23.2; 435/69.1

ABSTRACT:

The present invention relates to compositions and methods for preparing poly-unsaturated long chain fatty acids in plants, plant parts and plant cells, such as leaves, roots, fruits and seeds. Nucleic acid sequences and constructs encoding PKS-like genes required for the poly-unsaturated long chain fatty acid production, including the genes responsible for eicosapentenoic acid production of *Shewanella putrefaciens* and novel genes associated with the production of docosahexenoic acid in *Vibrio marinus* are used to generate transgenic plants, plant parts and cells which contain and express one or more transgenes encoding one or more of the PKS-like genes associated with such long chain polyunsaturated fatty acid production. Expression of the PKS-like genes in the plant system permits the large scale production of poly-unsaturated long chain fatty acids such as eicosapentenoic acid and docosahexenoic acid for modification of the fatty acid profile of plants, plant parts and tissues. Manipulation of the fatty acid profiles allows for the production of commercial quantities of novel plant oils and products.

3 Claims, 105 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 123

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. D.
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☐ 18. Document ID: WO 200042195 A2, EP 1147197 A2, BR 200008760 A, JP 2002534123 W, MX 2001007153 A1

L1: Entry 18 of 19

File: DWPI

Jul 20, 2000

DERWENT-ACC-NO: 2000-476063

DERWENT-WEEK: 200638

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TITLE: New DNA sequences encoding for polyketide (PK)-like synthesis pathway genes from *Shewanella*, *Vibrio* and *Schizochtrium*, useful for creating transgenic plants that express poly-unsaturated long chain fatty acids

INVENTOR: FACCIOOTTI, D; LASSNER, M ; METZ, G J ; METZ, J G

PRIORITY-DATA: 1999US-0231899 (January 14, 1999)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>WO 200042195 A2</u>	July 20, 2000	E	303	C12N015/52
<u>EP 1147197 A2</u>	October 24, 2001	E	000	C12N015/52
<u>BR 200008760 A</u>	October 8, 2002		000	C12N015/52
<u>JP 2002534123 W</u>	October 15, 2002		319	C12N015/09
<u>MX 2001007153 A1</u>	July 1, 2003		000	A01H005/00

INT-CL (IPC): A01H 5/00; A23D 9/02; A23L 1/30; C07K 14/28; C07K 14/405; C11B 1/00; C11C 1/00; C11C 3/00; C12N 1/15; C12N 1/19; C12N 1/21; C12N 5/10; C12N 9/00; C12N 15/09; C12N 15/10; C12N 15/52; C12N 15/82; C12P 7/64; C12N 9/00; C12N 9/00;

C12N 9/00; C12N 9/00; C12N 9/00; C12N 9/00; C12P 7/64; C12P 7/64; C12P 7/64;
C12P 7/64; C12P 7/64; C12P 7/64; C12R 1/01; C12R 1/01; C12R 1/19; C12R 1/19;
C12R 1/225; C12R 1/225; C12R 1/63; C12R 1/63; C12R 1/645; C12R 1/645; C12R 1/91;
C12R 1/91

ABSTRACTED-PUB-NO: WO 200042195A

BASIC-ABSTRACT:

NOVELTY - New DNA sequences encoding for polyketide (PK)-like synthesis (PKS-like) pathway genes from *Shewanella*, *Vibrio* and *Schizochytrium*, are new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the following:

- (1) an isolated nucleic acid (N1) comprising a *Vibrio marinus* nucleotide sequence selected from the open reading frame (ORF) 6 (7959 nucleotide sequence (I)), ORF 7 (2652 nucleotide sequence (II)), ORF 8 (6057 nucleotide sequence (III)), or ORF 9 (1665 nucleotide sequence (IV));
- (2) an isolated nucleic acid (N2) comprising a nucleotide sequence which encodes a polypeptide of a PKS-like synthesis system, where the system produces a docosahexenoic acid when expressed in a host cell;
- (3) an isolated nucleic acid (N3) comprising a Schizochytrium nucleotide sequence comprising the 4446 (V), 5215 (VI) or 4767 (VII) nucleotide sequence;
- (4) an isolated nucleic acid (N4) comprising a nucleotide sequence which is substantially identical to a sequence of at least 50 nucleotides of a *Vibrio marinus* nucleotide sequence selected from (I), (II), (III) or (IV);
- (5) a recombinant microbial cell comprising at least one copy of N3;
- (6) a method (M1) for production of docosahexenoic acid in a microbial cell culture, comprising growing a microbial cell culture, where the microbial cells or ancestors of the microbial cells were transformed with a vector comprising one or more nucleic acids having a nucleotide sequence which encodes a polypeptide of a PK synthesizing system, where one or more nucleic acids are operably linked to a promoter;
- (7) a method (M2) for production of a long chain polyunsaturated fatty acid in a plant cell, comprising growing a plant, where the plant cells or ancestors of the plant cells were transformed with a vector comprising one or more nucleic acids, operably linked to a promoter functional in a plant cell, having a nucleotide sequence which encodes one or more polypeptides of a PK synthesizing system which produces a long chain polyunsaturated fatty acid;
- (8) a recombinant plant cell comprising one or more nucleic acids having a nucleotide sequence which encodes one or more polypeptides of a PK synthesizing system which produces a long chain polyunsaturated fatty acid, where each of the nucleic acids are operably linked to a promoter functional in the plant cell;
- (9) a plant oil produced by a recombinant plant cell of (8);
- (10) a dietary supplement comprising a plant oil of (9);
- (11) a recombinant *E. coli* cell comprising one or more nucleic acids having a nucleotide sequence which encodes one or more polypeptides of a PK synthesizing system which produces a long chain polyunsaturated fatty acid, where each of the nucleic acids are operably linked to a promoter function in the *E. coli* cell; and
- (12) a plant oil produced by a recombinant plant cell, where the plant oil

comprises a long chain polyunsaturated fatty acid exogenous to the plant oil and the plant cell is produced by transforming the plant cell or an ancestor of the plant cell with a vector comprising one or more polypeptide of a PK synthesizing system which produces a long chain polyunsaturated fatty acid, where each of the nucleic acids are operably linked to a promoter functional in the plant cell.

All sequences are defined in the specification.

ACTIVITY - None given.

MECHANISM OF ACTION - None given.

No biological data provided.

USE - The nucleic acids are useful for isolating related molecules or in methods to detect organisms expressing the PKS-like genes. They are also useful for creating transgenic plants that express poly-unsaturated long chain fatty acids. The poly-unsaturated long chain fatty acids produced recombinantly are useful as dietary supplements for patients undergoing intravenous feeding or for preventing or treating malnutrition. The poly-unsaturated long chain fatty acids can also be incorporated into cooking oils, fats or margarine formulated so that in normal use the recipient receives a desired amount of poly-unsaturated long chain fatty acids.

The nucleic acids are also useful in large scale production of docosahexenoic acid and eicosapentenoic acid, and for the modification of the fatty acid profile of host cells and edible plant tissues and/or plant parts.

ADVANTAGE - Transgenic production of polyunsaturated fatty acids in particular host cells allows quicker purification from natural sources such as fish or plants.

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 19. Document ID: DE 69830587 T2, WO 9846764 A1, AU 9871147 A, NO 9904926 A, EP 996732 A1, US 6051754 A, CZ 9903584 A3, AU 720677 B, BR 9808506 A, US 6075183 A, SK 9901399 A3, CN 1253588 A, NZ 337459 A, HU 200001517 A2, MX 9909328 A1, KR 2001006258 A, JP 2001527395 W, EP 996732 B1, DE 69830587 E, IN 9800636 I2, EP 1598422 A2, ES 2245030 T3

L1: Entry 19 of 19

File: DWPI

May 24, 2006

DERWENT-ACC-NO: 1999-080739

DERWENT-WEEK: 200635

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TITLE: Nucleic acid construct able to express fatty acid desaturase in plants - useful in human or animal nutrition, as cosmetics and therapeutically, e.g. for restenosis, cancer and diabetes

INVENTOR: CHAUDHARY, S; HUANG, Y ; KNUTZON, D ; LEONARD, E ; MUKERJI, P ; THURMOND, J ; LEONARD, A E ; KUKERJI, P

PRIORITY-DATA: 1997US-0956985 (October 24, 1997), 1997US-0833610 (April 11, 1997), 1997US-0834033 (April 11, 1997), 1997US-0834655 (April 11, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
<u>DE 69830587 T2</u>	May 24, 2006		000	C12N015/53
<u>WO 9846764 A1</u>	October 22, 1998	E	209	C12N015/53
<u>AU 9871147 A</u>	November 11, 1998		000	C12N015/53
<u>NO 9904926 A</u>	November 30, 1999		000	C12N000/00
<u>EP 996732 A1</u>	May 3, 2000	E	000	C12N015/53
<u>US 6051754 A</u>	April 18, 2000		000	C12N015/82
<u>CZ 9903584 A3</u>	May 17, 2000		000	C12N015/53
<u>AU 720677 B</u>	June 8, 2000		000	C12N015/53
<u>BR 9808506 A</u>	May 23, 2000		000	C12N015/53
<u>US 6075183 A</u>	June 13, 2000		000	A01H005/00
<u>SK 9901399 A3</u>	May 16, 2000		000	C12N015/53
<u>CN 1253588 A</u>	May 17, 2000		000	C12N015/53
<u>NZ 337459 A</u>	July 28, 2000		000	A61K031/20
<u>HU 200001517 A2</u>	August 28, 2000		000	C12N015/53
<u>MX 9909328 A1</u>	September 1, 2000		000	C12N015/53
<u>KR 2001006258 A</u>	January 26, 2001		000	C12N015/82
<u>JP 2001527395 W</u>	December 25, 2001		229	C12N015/09
<u>EP 996732 B1</u>	June 15, 2005	E	000	C12N015/53
<u>DE 69830587 E</u>	July 21, 2005		000	C12N015/53
<u>IN 9800636 I2</u>	March 18, 2005	E	000	A01H005/00
<u>EP 1598422 A2</u>	November 23, 2005	E	000	C12N015/53
<u>ES 2245030 T3</u>	December 16, 2005		000	C12N015/53

A , JP 2001527395 W INT-CL (IPC): A01H 5/00; A23D 9/007; A23K 1/00; A23K 1/16; A23L 1/30; A61K 31/185; A61K 31/20; A61K 38/00; A61P 3/02; C07H 21/04; C11B 1/00; C11C 3/00; C12N 0/00; C12N 1/21; C12N 5/04; C12N 5/10; C12N 9/02; C12N 15/09; C12N 15/53; C12N 15/82; C12N 15/83; C12P 7/64; C12N 15/09; C12R 1/645

ABSTRACTED-PUB-NO: US 6051754A

BASIC-ABSTRACT:

Nucleic acid construct contains: (a) at least one of 1617 (S1), 1488 (S2) and 1488 (S3) bp sequences (I), or (b) any sequence encoding the same proteins as (I), coupled to a heterologous sequence, particularly an expression control sequence functional in plants. Also new are: (A) recombinant plant cells containing at least one DNA encoding a Mortierella alpina fatty acid desaturase (FAD), so that it can produce a polyunsaturated fatty acid (PUFA); (B) oils produced by these cells (or plants containing them), and (C) 7 sequences encoding human FAD and two sequences encoding Schizochytrium FAD, when expressed in plant cells.

USE - Cells of (A) produce linoleic acid (LA), arachidonic acid (ARA), gamma - linolenic acid (GLA), dihomo- gamma -linolenic acid (DGLA), stearidonic acid (SDA) and eicosapentaenoic acid (EPA). The resulting plant oils are used: (i) to treat or prevent malnutrition; (ii) in infant feeding formulas, or dietary supplements or substitutes, for use in humans or animals; (iii) for treating disorders associated with inadequate consumption or production of PUFA (or their meabolites such as prostaglandins), e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, psoriasis, osteoporosis, cancer (including rendering cells more susceptible to chemotherapy), eczema, AIDS, diabetes; (iv) as cosmetics, and (v) as animal feeds. Fragments of (I) are used as probes to isolate related coding sequences.

ADVANTAGE - Recombinant plants can produce high yields of PUFA, since new pathways can be created and unwanted ones suppressed. Plants can be engineered to express oils of particular PUFA composition, e.g. one similar to that in human milk, and product recovery is simpler than with e.g. fish.

ABSTRACTED-PUB-NO:

US 6075183A EQUIVALENT-ABSTRACTS:

Nucleic acid construct contains: (a) at least one of 1617 (S1), 1488 (S2) and 1488 (S3) bp sequences (I), or (b) any sequence encoding the same proteins as (I), coupled to a heterologous sequence, particularly an expression control sequence functional in plants. Also new are: (A) recombinant plant cells containing at least one DNA encoding a *Mortierella alpina* fatty acid desaturase (FAD), so that it can produce a polyunsaturated fatty acid (PUFA); (B) oils produced by these cells (or plants containing them), and (C) 7 sequences encoding human FAD and two sequences encoding Schizochytrium FAD, when expressed in plant cells.

USE - Cells of (A) produce linoleic acid (LA), arachidonic acid (ARA), gamma - linolenic acid (GLA), dihomo- gamma -linolenic acid (DGLA), stearidonic acid (SDA) and eicosapentaenoic acid (EPA). The resulting plant oils are used: (i) to treat or prevent malnutrition; (ii) in infant feeding formulas, or dietary supplements or substitutes, for use in humans or animals; (iii) for treating disorders associated with inadequate consumption or production of PUFA (or their meabolites such as prostaglandins), e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, psoriasis, osteoporosis, cancer (including rendering cells more susceptible to chemotherapy), eczema, AIDS, diabetes; (iv) as cosmetics, and (v) as animal feeds. Fragments of (I) are used as probes to isolate related coding sequences.

ADVANTAGE - Recombinant plants can produce high yields of PUFA, since new pathways can be created and unwanted ones suppressed. Plants can be engineered to express oils of particular PUFA composition, e.g. one similar to that in human milk, and product recovery is simpler than with e.g. fish.

Nucleic acid construct contains: (a) at least one of 1617 (S1), 1488 (S2) and 1488 (S3) bp sequences (I), or (b) any sequence encoding the same proteins as (I), coupled to a heterologous sequence, particularly an expression control sequence functional in plants. Also new are: (A) recombinant plant cells containing at least one DNA encoding a *Mortierella alpina* fatty acid desaturase (FAD), so that it can produce a polyunsaturated fatty acid (PUFA); (B) oils produced by these cells (or plants containing them), and (C) 7 sequences encoding human FAD and two sequences encoding Schizochytrium FAD, when expressed in plant cells.

USE - Cells of (A) produce linoleic acid (LA), arachidonic acid (ARA), gamma - linolenic acid (GLA), dihomo- gamma -linolenic acid (DGLA), stearidonic acid (SDA) and eicosapentaenoic acid (EPA). The resulting plant oils are used: (i) to treat or prevent malnutrition; (ii) in infant feeding formulas, or dietary supplements or substitutes, for use in humans or animals; (iii) for treating disorders associated with inadequate consumption or production of PUFA (or their meabolites such as prostaglandins), e.g. restenosis after angioplasty, inflammation, rheumatoid arthritis, psoriasis, osteoporosis, cancer (including rendering cells more susceptible to chemotherapy), eczema, AIDS, diabetes; (iv) as cosmetics, and (v) as animal feeds. Fragments of (I) are used as probes to isolate related coding sequences.

ADVANTAGE - Recombinant plants can produce high yields of PUFA, since new pathways can be created and unwanted ones suppressed. Plants can be engineered to express oils of particular PUFA composition, e.g. one similar to that in human milk, and product recovery is simpler than with e.g. fish.

WO 9846764A

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs	Generate OACS
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Terms	Documents
polyunsaturated fatty acid and (schizochytrium or thraustochytrium) and (gene or dna or cdna or clon\$5)	19

Display Format:

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Fwd Refs

Bkwd Refs

Generate OACS

Search Results - Record(s) 1 through 30 of 81 returned.

☐ 1. Document ID: US 20060246556 A1

L2: Entry 1 of 81

File: PGPB

Nov 2, 2006

PGPUB-DOCUMENT-NUMBER: 20060246556

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060246556 A1

TITLE: Novel method for the production of polyunsaturated fatty acids

PUBLICATION-DATE: November 2, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Napier; JohnathanA	Herts		GB
Sayanova; Olga	Hertfordshire		GB
Lazarus; Colin	Bristol		GB
Qi; Baoxiu	Bath		GB
Heinz; Ernst	Hamburg		DE
Zank; Thorsten	Mannheim		DE
Zahringer; Ulrich	Ahrensburg		DE

US-CL-CURRENT: 435/128; 435/134

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC	Drawings
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☐ 2. Document ID: US 20060241088 A1

L2: Entry 2 of 81

File: PGPB

Oct 26, 2006

PGPUB-DOCUMENT-NUMBER: 20060241088

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060241088 A1

TITLE: Oxylipins from long chain polyunsaturated fatty acids and methods of making and using the same

PUBLICATION-DATE: October 26, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Arterburn; Linda	Ellicott City	MD	US

Barclay; William	Boulder	CO	US
Dangi; Bindi	Elkridge	MD	US
Flatt; James	Baltimore	MD	US
Lee; Jung	McLean	VA	US
Elswyk; Mary Van	Longmont	CO	US

US-CL-CURRENT: [514/165](#); [514/546](#), [554/230](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 3. Document ID: US 20060233845 A1

L2: Entry 3 of 81

File: PGPB

Oct 19, 2006

PGPUB-DOCUMENT-NUMBER: 20060233845

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060233845 A1

TITLE: Micro/nanoparticle obtained from lipid-containing marine organisms for use in pharmaceuticals and cosmetics

PUBLICATION-DATE: October 19, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Lukowski; Gerold	Greifswald		DE
Juelich; Wolf-Dieter	Greifswald		DE
Lindequist; Ulrike	Greifswald		DE
Mundt; Sabine	Stralsund		DE

US-CL-CURRENT: [424/401](#); [435/134](#), [977/926](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 4. Document ID: US 20060218668 A1

L2: Entry 4 of 81

File: PGPB

Sep 28, 2006

PGPUB-DOCUMENT-NUMBER: 20060218668

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060218668 A1

TITLE: -4Desaturases from euglena gracilis, expressing plants, and oils containing pufa

PUBLICATION-DATE: September 28, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Cirpus; Petra	Mannheim		DE

Bauer; Jo	Ludwigshafen	DE
Meyer; Astrid	Koln	DE
Heinz; Ernst	Hamburg	DE
Zahringer; Ulrich	Ahrensburg	DE

US-CL-CURRENT: 800/281; 435/134, 435/190, 435/419, 435/468, 554/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 5. Document ID: US 20060195939 A1

L2: Entry 5 of 81

File: PGPB

Aug 31, 2006

PGPUB-DOCUMENT-NUMBER: 20060195939

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060195939 A1

TITLE: Delta-8 desaturase and its use in making polyunsaturated fatty acids

PUBLICATION-DATE: August 31, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Damude; Howard Glenn	Hockessin	DE	US
Zhu; Quinn Qun	West Chester	PA	US

US-CL-CURRENT: 800/281; 435/134, 435/190, 435/254.2, 435/419, 435/468, 435/69.1,
536/23.2, 554/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 6. Document ID: US 20060174376 A1

L2: Entry 6 of 81

File: PGPB

Aug 3, 2006

PGPUB-DOCUMENT-NUMBER: 20060174376

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060174376 A1

TITLE: Novel plant acyltransferases specific for long-chained, multiply unsaturated fatty acids

PUBLICATION-DATE: August 3, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Renz; Andreas	Limburgerhof		DE
Bauer; Jorg	Ludwigshafen		DE
Frentzen; Margit	Aachen		DE
Sozer; Nursen	Ubach-Palenberg		DE

Keith; Stobart

Bristol

GB

US-CL-CURRENT: 800/281; 435/134, 435/419, 435/468, 536/23.2, 554/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 7. Document ID: US 20060168687 A1

L2: Entry 7 of 81

File: PGPB

Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060168687

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060168687 A1

TITLE: Method for the production of polyunsaturated fatty acids

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Renz; Andreas	Limburgerhof		DE
Heinz; Ernst	Hamburg		DE
Abbadi; Amine	Hamburg		DE
Domergue; Frederic	Hamburg		DE
Zank; Thorsten	Mannheim		DE

US-CL-CURRENT: 800/281; 424/401, 435/134, 435/193, 435/254.2, 435/320.1, 435/419, 435/69.1, 536/23.2, 554/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 8. Document ID: US 20060165735 A1

L2: Entry 8 of 81

File: PGPB

Jul 27, 2006

PGPUB-DOCUMENT-NUMBER: 20060165735

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060165735 A1

TITLE: Stable emulsions of oils in aqueous solutions and methods for producing same

PUBLICATION-DATE: July 27, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Abril; Jesus Ruben	Westminster	CO	US
Stagnitti; George E.	Longmont	CO	US

US-CL-CURRENT: 424/401; 424/195.17, 424/727, 424/755, 424/757, 424/764, 424/776, 800/281

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw. De
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☐ 9. Document ID: US 20060160193 A1

L2: Entry 9 of 81

File: PGPB

Jul 20, 2006

PGPUB-DOCUMENT-NUMBER: 20060160193

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060160193 A1

TITLE: Acyltransferases for alteration of polyunsaturated fatty acids and oil content in oleaginous yeasts

PUBLICATION-DATE: July 20, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Yadav; Narendra S.	Chadds Ford	PA	US
Zhang; Hongxiang	Chadds Ford	PA	US

US-CL-CURRENT: 435/134; 435/193, 435/254.2, 435/483, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw. De
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☐ 10. Document ID: US 20060117414 A1

L2: Entry 10 of 81

File: PGPB

Jun 1, 2006

PGPUB-DOCUMENT-NUMBER: 20060117414

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060117414 A1

TITLE: Fad4, Fad5, Fad5-2, and Fad6, novel fatty acid desaturase family members and uses thereof

PUBLICATION-DATE: June 1, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Qiu; Xiao	Saskatoon	NC	CA
Hong; Haiping	Morrisville		US

US-CL-CURRENT: 800/281; 435/190, 435/419, 435/468, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	K/MC	Draw. De
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☐ 11. Document ID: US 20060115881 A1

L2: Entry 11 of 81

File: PGPB

Jun 1, 2006

PGPUB-DOCUMENT-NUMBER: 20060115881
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060115881 A1

TITLE: High eicosapentaenoic acid producing strains of Yarrowia lipolytica

PUBLICATION-DATE: June 1, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Damude; Howard Glenn	Hockessin	DE	US
Gillies; Peter John	Landenberg	PA	US
Macool; Daniel Joseph	Philadelphia	PA	US
Picataggio; Stephen K.	Landenberg	PA	US
Pollak; Dana M. Walters	Media	PA	US
Ragghianti; James John	Bear	DE	US
Xue; Zhixiong	Chadds Ford	PA	US
Yadav; Narendra S.	Chadds Ford	PA	US
Zhang; Hongxiang	Chadds Ford	PA	US
Zhu; Quinn Qun	West Chester	PA	US

US-CL-CURRENT: 435/134; 435/190, 435/254.2, 435/483, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Drawings
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☐ 12. Document ID: US 20060110806 A1

L2: Entry 12 of 81

File: PGPB

May 25, 2006

PGPUB-DOCUMENT-NUMBER: 20060110806
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060110806 A1

TITLE: Docosaheptaenoic acid producing strains of Yarrowia lipolytica

PUBLICATION-DATE: May 25, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Damude; Howard Glenn	Hockessin	DE	US
Gillies; Peter John	Landenberg	PA	US
Macool; Daniel Joseph	Philadelphia	PA	US
Picataggio; Stephen K.	Landenberg	PA	US
Ragghianti; James John	Bear	DE	US
Seip; John E.	Alloway	NJ	US
Xue; Zhixiong	Chadds Ford	PA	US
Yadav; Narendra S.	Chadds Ford	PA	US
Zhang; Hongxiang	Chadds Ford	PA	US
Zhu; Quinn Qun	West Chester	PA	US

US-CL-CURRENT: [435/134](#); [435/190](#), [435/254.2](#), [435/483](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 13. Document ID: US 20060110521 A1

L2: Entry 13 of 81

File: PGPB

May 25, 2006

PGPUB-DOCUMENT-NUMBER: 20060110521

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060110521 A1

TITLE: High PUFA oil compositions

PUBLICATION-DATE: May 25, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Heise; Jerald D.	St. Louis	MO	US
Makadia; Vallabh	St. Louis	MO	US
Arhancet; Juan P.	Creve Coeur	MO	US
Morgenstern; David A.	Creve Coeur	MO	US

US-CL-CURRENT: [426/601](#); [554/224](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 14. Document ID: US 20060094102 A1

L2: Entry 14 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094102

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060094102 A1

TITLE: Ammonium transporter promoter for gene expression in oleaginous yeast

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Xue; Zhixiong	Chadds Ford	PA	US
Zhu; Quinn Qun	West Chester	PA	US

US-CL-CURRENT: [435/201](#); [435/254.2](#), [435/483](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 15. Document ID: US 20060094092 A1

L2: Entry 15 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094092

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060094092 A1

TITLE: High arachidonic acid producing strains of *Yarrowia lipolytica*

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Damude; Howard Glenn	Hockessin	DE	US
Gillies; Peter John	Landenberg	PA	US
Macool; Daniel Joseph	Philadelphia	PA	US
Picataggio; Stephen K.	Landenberg	PA	US
Pollak; Dana M. Walters	Media	PA	US
Ragghianti; James John	Bear	DE	US
Xue; Zhixiong	Chadds Ford	PA	US
Yadav; Narendra S.	Chadds Ford	PA	US
Zhang; Hongxiang	Chadds Ford	PA	US
Zhu; Quinn Qun	West Chester	PA	US

US-CL-CURRENT: 435/134; 435/254.2, 435/483

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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☐ 16. Document ID: US 20060094091 A1

L2: Entry 16 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094091

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060094091 A1

TITLE: *Mortierella alpina* glycerol-3-phosphate o-acyltransferase for alteration of polyunsaturated fatty acids and oil content in oleaginous organisms

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Macool; Daniel Joseph	Philadelphia	PA	US
Xue; Zhixiong	Chadds Ford	PA	US

US-CL-CURRENT: 435/134; 435/193, 435/254.2, 435/483, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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☐ 17. Document ID: US 20060094090 A1

L2: Entry 17 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094090

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060094090 A1

TITLE: Mortierella alpina lysophosphatidic acid acyltransferase homolog for alteration of polyunsaturated fatty acids and oil content in oleaginous organisms

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Damude; Howard Glenn	Hockessin	DE	US
Xue; Zhixiong	Chadds Ford	PA	US

US-CL-CURRENT: 435/134; 435/193, 435/254.2, 435/483, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. D
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☐ 18. Document ID: US 20060094088 A1

L2: Entry 18 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094088

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060094088 A1

TITLE: Acyltransferase regulation to increase the percent of polyunsaturated fatty acids in total lipids and oils of oleaginous organisms

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Picataggio; Stephen K.	Landenberg	PA	US
Yadav; Narendra S.	Chadds Ford	PA	US
Zhang; Hongxiang	Chadds Ford	PA	US

US-CL-CURRENT: 435/134; 435/193, 435/254.2, 435/483, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw. D
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☐ 19. Document ID: US 20060094087 A1

L2: Entry 19 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094087
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060094087 A1

TITLE: Mortierella alpina diacylglycerol acyltransferase for alteration of polyunsaturated fatty acids and oil content in oleaginous organisms

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Xue; Zhixiong	Chadds Ford	PA	US
Yadav; Narendra S..	Chadds Ford	PA	US
Macool; Daniel Joseph	Philadelphia	PA	US

US-CL-CURRENT: 435/134; 435/193, 435/254.2, 435/483, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 20. Document ID: US 20060094086 A1

L2: Entry 20 of 81

File: PGPB

May 4, 2006

PGPUB-DOCUMENT-NUMBER: 20060094086
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060094086 A1

TITLE: Diacylglycerol acyltransferases for alteration of polyunsaturated fatty acids and oil content in oleaginous organisms

PUBLICATION-DATE: May 4, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Yadav; Narendra S.	Chadds Ford	PA	US
Xue; Zhixiong	Chadds Ford	PA	US
Zhang; Hongxiang	Chadds Ford	PA	US

US-CL-CURRENT: 435/134; 435/193, 435/254.2, 435/483, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw D
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☐ 21. Document ID: US 20060057690 A1

L2: Entry 21 of 81

File: PGPB

Mar 16, 2006

PGPUB-DOCUMENT-NUMBER: 20060057690
PGPUB-FILING-TYPE:
DOCUMENT-IDENTIFIER: US 20060057690 A1

TITLE: Glycerol-3-phosphate o-acyltransferase promoter for gene expression in

oleaginous yeast

PUBLICATION-DATE: March 16, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Xue; Zhixiong	Chadds Ford	PA	US
Zhu; Quinn Qun	West Chester	PA	US

US-CL-CURRENT: 435/134; 435/254.2, 435/483

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 22. Document ID: US 20060051847 A1

L2: Entry 22 of 81

File: PGPB

Mar 9, 2006

PGPUB-DOCUMENT-NUMBER: 20060051847

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060051847 A1

TITLE: Metabolically engineered cells for the production of polyunsaturated fatty acids

PUBLICATION-DATE: March 9, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Gunnarsson; Nina Katarina	Copenhagen N		DK
Forster; Jochen	Copenhagen V		DK
Nielsen; Jens Bredal	Charlottenlund		DK

US-CL-CURRENT: 435/134; 435/254.21, 435/483

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 23. Document ID: US 20060035351 A1

L2: Entry 23 of 81

File: PGPB

Feb 16, 2006

PGPUB-DOCUMENT-NUMBER: 20060035351

PGPUB-FILING-TYPE:

DOCUMENT-IDENTIFIER: US 20060035351 A1

TITLE: Production of gamma-linolenic acid in oleaginous yeast

PUBLICATION-DATE: February 16, 2006

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
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US-CL-CURRENT: 435/134; 435/254.1, 435/483

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. De
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Jan 26, 2006

US-CL-CURRENT: 435/6; 435/254.2, 435/483, 435/69.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KOMC	Drawn De
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Dec 29, 2005

US-CL-CURRENT: 435/134; 435/190, 435/254.2, 435/483, 554/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 26. Document ID: US 20050282781 A1

L2: Entry 26 of 81

File: PGPB

Dec 22, 2005

PGPUB-DOCUMENT-NUMBER: 20050282781

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050282781 A1

TITLE: Compositions of stable bioactive metabolites of docosahexaenoic (DHA) and eicosapentaenoic (EPA) acids

PUBLICATION-DATE: December 22, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Ghosal, Shibnath	West Bengal State		IN

US-CL-CURRENT: 514/80; 514/454

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 27. Document ID: US 20050273885 A1

L2: Entry 27 of 81

File: PGPB

Dec 8, 2005

PGPUB-DOCUMENT-NUMBER: 20050273885

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050273885 A1

TITLE: Synthesis of long-chain polyunsaturated fatty acids by recombinant cells

PUBLICATION-DATE: December 8, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Singh, Surinder Pal	Downer		AU
Robert, Stanley Suresh	Oyster Cove		AU
Nichols, Peter David	West Hobart		AU
Ellis Blackburn, Susan Irene	Battery Point		AU
Zhou, Xue-Rong	Evatt		AU
Petrie, James Robertson	Bywong		AU
Green, Allan Graham	Braddon		AU

US-CL-CURRENT: 800/281; 435/134, 435/419, 435/468

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 28. Document ID: US 20050273884 A1

L2: Entry 28 of 81

File: PGPB

Dec 8, 2005

PGPUB-DOCUMENT-NUMBER: 20050273884
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050273884 A1

TITLE: PUFA polyketide synthase systems and uses thereof

PUBLICATION-DATE: December 8, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Metz, James G.	Longmont	CO	US
Flatt, James H.	Longmont	CO	US
Kuner, Jerry M.	Longmont	CO	US
Barclay, William R.	Boulder	CO	US

US-CL-CURRENT: 800/281; 435/193, 435/419, 435/468, 435/6, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 29. Document ID: US 20050273883 A1

L2: Entry 29 of 81

File: PGPB

Dec 8, 2005

PGPUB-DOCUMENT-NUMBER: 20050273883
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050273883 A1

TITLE: Pufa polyketide synthase systems and uses thereof

PUBLICATION-DATE: December 8, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Metz, James G.	Longmont	CO	US
Flatt, James H.	Longmont	CO	US
Kuner, Jerry M.	Longmont	CO	US
Barclay, William R.	Boulder	CO	US

US-CL-CURRENT: 800/281; 435/193, 435/419, 435/468, 435/6, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 30. Document ID: US 20050266440 A1

L2: Entry 30 of 81

File: PGPB

Dec 1, 2005

PGPUB-DOCUMENT-NUMBER: 20050266440
PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050266440 A1

TITLE: PUFA polyketide synthase systems and uses thereof

PUBLICATION-DATE: December 1, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Metz, James G.	Longmont	CO	US
Flatt, James H.	Longmont	CO	US
Kuner, Jerry M.	Longmont	CO	US
Barclay, William R.	Boulder	CO	US

US-CL-CURRENT: [435/6](#); [435/134](#), [435/193](#), [435/252.3](#), [435/320.1](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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Terms

Documents

polyunsaturated fatty acid and
(schizochytrium or thraustochytrium) and
(gene or dna or cdna or clon\$5)

81

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☐ 31. Document ID: US 20050216975 A1

L2: Entry 31 of 81

File: PGPB

Sep 29, 2005

PGPUB-DOCUMENT-NUMBER: 20050216975

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050216975 A1

TITLE: Delta 12 desaturases suitable for altering levels of polyunsaturated fatty acids in oleaginous yeast

PUBLICATION-DATE: September 29, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Yadav, Narendra S.	Chadds Ford	PA	US
Zhu, Quinn Qun	West Chester	PA	US
Zhang, Hongxiang	Chadds Ford	PA	US

US-CL-CURRENT: 800/281; 435/134, 435/190, 435/254.2, 435/468, 435/483

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KVMC	Draw. De
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☐ 32. Document ID: US 20050202148 A1

L2: Entry 32 of 81

File: PGPB

Sep 15, 2005

PGPUB-DOCUMENT-NUMBER: 20050202148

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050202148 A1

TITLE: Preparation of microbial oil

PUBLICATION-DATE: September 15, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Streekstra, Hugo	Amsterdam		NL
Brocken, Petrus Joseph Maria	De Lier		NL

US-CL-CURRENT: 426/601

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 33. Document ID: US 20050191679 A1

L2: Entry 33 of 81

File: PGPB

Sep 1, 2005

PGPUB-DOCUMENT-NUMBER: 20050191679
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050191679 A1

TITLE: Schizochytrium fatty acid synthase (FAS) and products and methods related thereto

PUBLICATION-DATE: September 1, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Metz, James G.	Longmont	CO	US
Weaver, Craig A.	Boulder	CO	US
Kuner, Jerry	Longmont	CO	US

US-CL-CURRENT: 435/6; 435/134, 435/193, 435/258.1, 435/320.1, 435/69.1, 514/560, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 34. Document ID: US 20050166271 A1

L2: Entry 34 of 81

File: PGPB

Jul 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050166271
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050166271 A1

TITLE: Fatty acid desaturase gene obtained from pomegranate and method for the production of unsaturated fatty acids

PUBLICATION-DATE: July 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Feubner, Ivo	Halle		DE
Hornung, Ellen	Quedlinburg		DE
Pernstich, Christian	Halle		DE
Renz, Andreas	Limburgerhof		DE

US-CL-CURRENT: 800/8; 435/190, 435/320.1, 435/325, 435/419, 435/468, 435/6, 435/69.1, 536/23.2, 800/281

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 35. Document ID: US 20050164192 A1

L2: Entry 35 of 81

File: PGPB

Jul 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050164192

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050164192 A1

TITLE: Transgenic plants expressing enzymes involved in fatty acid biosynthesis

PUBLICATION-DATE: July 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Graham, Ian Alexander	York		GB
Tonon, Thierry	Roscoff		GB

US-CL-CURRENT: 435/6; 435/134, 435/193, 435/257.2, 435/471, 435/69.1, 800/281,
800/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 36. Document ID: US 20050136519 A1

L2: Entry 36 of 81

File: PGPB

Jun 23, 2005

PGPUB-DOCUMENT-NUMBER: 20050136519

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050136519 A1

TITLE: Production of polyunsaturated fatty acids in oleaginous yeasts

PUBLICATION-DATE: June 23, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Picataggio, Stephen K.	Landenberg	PA	US
Yadav, Narendra S.	Chadds Ford	PA	US
Zhu, Quinn Qun	West Chester	PA	US

US-CL-CURRENT: 435/134; 435/190, 435/254.2, 435/483

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 37. Document ID: US 20050132442 A1

L2: Entry 37 of 81

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050132442

PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050132442 A1

TITLE: Delta 15 desaturases suitable for altering levels of polyunsaturated fatty acids in oleaginous plants and yeast

PUBLICATION-DATE: June 16, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Yadav, Narendra S.	Chadds Ford	PA	US
Zhang, Hongxiang	Chadds Ford	PA	US

US-CL-CURRENT: 800/281; 435/134, 435/190, 435/254.2, 435/419, 435/468, 435/483, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 38. Document ID: US 20050132441 A1

L2: Entry 38 of 81

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050132441
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050132441 A1

TITLE: Delta15 desaturases suitable for altering levels of polyunsaturated fatty acids in oilseed plants and oleaginous yeast

PUBLICATION-DATE: June 16, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Damude, Howard Glenn	Hockessin	DE	US
Yadav, Narendra S.	Chadds Ford	PA	US

US-CL-CURRENT: 800/281; 435/468, 554/8

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 39. Document ID: US 20050130280 A1

L2: Entry 39 of 81

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050130280
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050130280 A1

TITLE: Fructose-bisphosphate aldolase regulatory sequences for gene expression in oleaginous yeast

PUBLICATION-DATE: June 16, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Pollak, Dana M. Walters	Media	PA	US
Zhu, Quinn Qun	West Chester	PA	US

US-CL-CURRENT: [435/134](#); [435/190](#), [435/193](#), [435/254.2](#), [435/483](#), [554/1](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 40. Document ID: US 20050129739 A1

L2: Entry 40 of 81

File: PGPB

Jun 16, 2005

PGPUB-DOCUMENT-NUMBER: 20050129739

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050129739 A1

TITLE: Production and use of a polar lipid-rich fraction containing omega-3 and/or omega-6 highly unsaturated fatty acids from microbes, genetically modified plant seeds and marine organisms

PUBLICATION-DATE: June 16, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kohn, Gerhard	Woerrstadt		DE
Banzhaf, Wulf	Sieffersheim		DE
Abril, Jesus	Westminster		DE

US-CL-CURRENT: [424/442](#); [426/601](#), [514/548](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 41. Document ID: US 20050115897 A1

L2: Entry 41 of 81

File: PGPB

Jun 2, 2005

PGPUB-DOCUMENT-NUMBER: 20050115897

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050115897 A1

TITLE: Extraction and winterization of lipids from oilseed and microbial sources

PUBLICATION-DATE: June 2, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Dueppen, Daniel G	Lexington	KT	US

Zeller, Samuel G.	Severn	MD	US
Diltz, Sandra I.	Severn	MD	US
Driver, Robert	New Canaan	CT	US

US-CL-CURRENT: [210/634](#); [210/702](#), [436/71](#), [554/20](#), [554/21](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 42. Document ID: US 20050112719 A1

L2: Entry 42 of 81

File: PGPB

May 26, 2005

PGPUB-DOCUMENT-NUMBER: 20050112719

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050112719 A1

TITLE: Product and process for transformation of thraustochytriales microorganisms

PUBLICATION-DATE: May 26, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Roessler, Paul G.	San Diego	CA	US
Matthews, T. Dave	San Diego	CA	US
Ramseier, Tom M.	Poway	CA	US
Metz, James G.	Longmont	CO	US

US-CL-CURRENT: [435/67](#); [435/193](#), [435/252.3](#), [435/320.1](#), [435/6](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 43. Document ID: US 20050100995 A1

L2: Entry 43 of 81

File: PGPB

May 12, 2005

PGPUB-DOCUMENT-NUMBER: 20050100995

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050100995 A1

TITLE: PUFA polyketide synthase systems and uses thereof

PUBLICATION-DATE: May 12, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Weaver, Craig A.	Boulder	CO	US
Zirkle, Ross	Longmont	CO	US
Metz, James G.	Longmont	CO	US

US-CL-CURRENT: [435/134](#); [435/189](#), [435/193](#), [435/252.3](#), [435/320.1](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw D
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☐ 44. Document ID: US 20050089981 A1

L2: Entry 44 of 81

File: PGPB

Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050089981

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050089981 A1

TITLE: Elongase gene and production of delta9-polyunsaturated fatty acids

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Napier, Johnathan A	Bristol		GB
Lazarus, Colin m	Bristol		GB
Qi, Baoxiu	Bath		GB
Lerchl, Jens	Svalov		SE

US-CL-CURRENT: 435/193; 435/320.1, 435/419, 435/468, 435/69.1, 536/23.2, 800/281

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw D
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☐ 45. Document ID: US 20050089865 A1

L2: Entry 45 of 81

File: PGPB

Apr 28, 2005

PGPUB-DOCUMENT-NUMBER: 20050089865

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050089865 A1

TITLE: Delta 6 desaturases from primulaceae, expressing plants and pufa-containing oils

PUBLICATION-DATE: April 28, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Napier, Johnathan A	Bristol		GB
Sayanova, Olga	Hertfordshire		GB

US-CL-CURRENT: 435/6; 435/190, 435/252.3, 435/320.1, 435/419, 435/69.1, 536/23.2, 800/281

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw D
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☐ 46. Document ID: US 20050043527 A1

L2: Entry 46 of 81

File: PGPB

Feb 24, 2005

PGPUB-DOCUMENT-NUMBER: 20050043527
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050043527 A1

TITLE: Delta-12 desaturase gene suitable for altering levels of polyunsaturated fatty acids in oleaginous yeasts

PUBLICATION-DATE: February 24, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Yadav, Narendra S.	Chadds Ford	PA	US
Zhang, Hongxiang	Chadds Ford	PA	US

US-CL-CURRENT: 536/23.7

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 47. Document ID: US 20050019372 A1

L2: Entry 47 of 81

File: PGPB

Jan 27, 2005

PGPUB-DOCUMENT-NUMBER: 20050019372
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050019372 A1

TITLE: Modified-fat nutritional products useful preventing or treating obesity

PUBLICATION-DATE: January 27, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Corkey, Barbara E.	Boston	MA	US
Guo, Wen	Stoneham	MA	US
Jianrong, Han	Stoneham	MA	US

US-CL-CURRENT: 424/439

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 48. Document ID: US 20050014270 A1

L2: Entry 48 of 81

File: PGPB

Jan 20, 2005

PGPUB-DOCUMENT-NUMBER: 20050014270
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20050014270 A1

TITLE: Glyceraldehyde-3-phosphate dehydrogenase and phosphoglycerate mutase promoters for gene expression in oleaginous yeast

PUBLICATION-DATE: January 20, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Picataggio, Stephen K.	Landenberg	PA	US
Zhu, Quinn Qun	West Chester	PA	US

US-CL-CURRENT: 435/483; 435/254.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 49. Document ID: US 20050014231 A1

L2: Entry 49 of 81

File: PGPB

Jan 20, 2005

PGPUB-DOCUMENT-NUMBER: 20050014231

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050014231 A1

TITLE: Genes involved in polyketide synthase pathways and uses thereof

PUBLICATION-DATE: January 20, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Columbus	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: 435/75; 435/134, 435/193, 435/252.3, 435/320.1, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 50. Document ID: US 20050009140 A1

L2: Entry 50 of 81

File: PGPB

Jan 13, 2005

PGPUB-DOCUMENT-NUMBER: 20050009140

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050009140 A1

TITLE: Elongase genes and uses thereof

PUBLICATION-DATE: January 13, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US

Leonard, Amanda Eun-Yeong	Gahanna	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [435/69.1](#); [435/193](#), [435/257.1](#), [435/320.1](#), [514/560](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 51. Document ID: US 20050005329 A1

L2: Entry 51 of 81

File: PGPB

Jan 6, 2005

PGPUB-DOCUMENT-NUMBER: 20050005329

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050005329 A1

TITLE: Delta4-desaturase genes and uses thereof

PUBLICATION-DATE: January 6, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Thurmond, Jennifer	Columbus	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Das, Tapas	Worthington	OH	US
Leonard, Amanda Eun-Yeong	Gahanna	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [800/281](#); [426/601](#), [435/320.1](#), [435/419](#), [435/468](#), [530/370](#), [530/371](#),
[536/23.6](#), [536/23.74](#), [800/278](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 52. Document ID: US 20050005328 A1

L2: Entry 52 of 81

File: PGPB

Jan 6, 2005

PGPUB-DOCUMENT-NUMBER: 20050005328

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050005328 A1

TITLE: Delta4-desaturase genes and uses thereof

PUBLICATION-DATE: January 6, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Thurmond, Jennifer	Columbus	OH	US

Huang, Yung-Sheng	Upper Arlington	OH	US
Das, Tapas	Worthington	OH	US
Leonard, Amanda Eun-Yeong	Gahanna	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [800/281](#); [435/190](#), [435/419](#), [435/468](#), [435/6](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 53. Document ID: US 20050003442 A1

L2: Entry 53 of 81

File: PGPB

Jan 6, 2005

PGPUB-DOCUMENT-NUMBER: 20050003442

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20050003442 A1

TITLE: Delta4-desaturase genes and uses thereof

PUBLICATION-DATE: January 6, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Thurmond, Jennifer	Columbus	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Das, Tapas	Worthington	OH	US
Leonard, Amanda Eun-Yeong	Gahanna	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [435/6](#); [435/190](#), [435/254.2](#), [435/483](#), [435/69.1](#), [514/560](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 54. Document ID: US 20040253621 A1

L2: Entry 54 of 81

File: PGPB

Dec 16, 2004

PGPUB-DOCUMENT-NUMBER: 20040253621

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040253621 A1

TITLE: Codon-optimized genes for the production of polyunsaturated fatty acids in oleaginous yeasts

PUBLICATION-DATE: December 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Picataggio, Stephen K.	Landenberg	PA	US

Zhu, Quinn Qun

West Chester

PA

US

US-CL-CURRENT: [435/6](#); [435/134](#), [435/193](#), [435/254.2](#), [435/320.1](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 55. Document ID: US 20040235127 A1

L2: Entry 55 of 81

File: PGPB

Nov 25, 2004

PGPUB-DOCUMENT-NUMBER: 20040235127

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040235127 A1

TITLE: PUFA polyketide synthase systems and uses thereof

PUBLICATION-DATE: November 25, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Metz, James G.	Longmont	CO	US
Weaver, Craig A.	Boulder	CO	US
Barclay, William R.	Boulder	CO	US
Flatt, James H.	Longmont	CO	US

US-CL-CURRENT: [435/183](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 56. Document ID: US 20040180126 A1

L2: Entry 56 of 81

File: PGPB

Sep 16, 2004

PGPUB-DOCUMENT-NUMBER: 20040180126

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040180126 A1

TITLE: Animal feed with low pufa concentration

PUBLICATION-DATE: September 16, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kies, Arie Karst	Pijnacker		NL

US-CL-CURRENT: [426/601](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 57. Document ID: US 20040172682 A1

L2: Entry 57 of 81

File: PGPB

Sep 2, 2004

PGPUB-DOCUMENT-NUMBER: 20040172682

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040172682 A1

TITLE: Production of very long chain polyunsaturated fatty acids in oilseed plants

PUBLICATION-DATE: September 2, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Kinney, Anthony J.	Wilmington	DE	US
Cahoon, Edgar Benjamin	Webster Groves	MO	US
Damude, Howard Glenn	Hockessin	DE	US
Hitz, William D.	Wilmington	DE	US
Liu, Zhan-Bin	West Chester	PA	US
Kolar, Charles W. JR.	St. Louis	DE	US

US-CL-CURRENT: 800/281

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 58. Document ID: US 20040161831 A1

L2: Entry 58 of 81

File: PGPB

Aug 19, 2004

PGPUB-DOCUMENT-NUMBER: 20040161831

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040161831 A1

TITLE: Microorganism having an ability of producing docosaheptaenoic acid and use thereof

PUBLICATION-DATE: August 19, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Komazawa, Hiroyuki	Asaka-shi		JP
Kojima, Masayoshi	Asaka-shi		JP
Aki, Tsunehiro	Higashi-hiroshima-shi		JP
Ono, Kazuhisa	Higashi-hiroshima-shi		JP
Kawakami, Masayuki	Asaka-shi		JP

US-CL-CURRENT: 435/134; 435/252.3

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 59. Document ID: US 20040161828 A1

L2: Entry 59 of 81

File: PGPB

Aug 19, 2004

PGPUB-DOCUMENT-NUMBER: 20040161828

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040161828 A1

TITLE: Gene cluster for production of the enediyne antitumor antibiotic C-1027

PUBLICATION-DATE: August 19, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Shen, Ben	Davis	CA	US
Liu, Wen	Tiantan	CA	CN
Christenson, Stephen D.	Davis		US
Standage, Scott	Bornet		GB

US-CL-CURRENT: 435/75; 435/105, 435/189, 435/191, 435/252.3, 435/320.1, 435/325,
435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 60. Document ID: US 20040111763 A1

L2: Entry 60 of 81

File: PGPB

Jun 10, 2004

PGPUB-DOCUMENT-NUMBER: 20040111763

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040111763 A1

TITLE: Novel elongase gene and method for producing multiple-unsaturated fatty acids

PUBLICATION-DATE: June 10, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Heinz, Ernst	Hamburg		DE
Zank, Thorsten	Hamburg		DE
Zahringer, Ulrich	Borstel		DE
Lerchl, Jens	Ladenburg		DE
Renz, Andreas	Limburgerhof		DE

US-CL-CURRENT: 800/281; 435/193, 435/320.1, 435/419, 435/468, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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Terms	Documents
polyunsaturated fatty acid and (schizochytrium or thraustochytrium) and (gene or dna or cdna or clon\$5)	81

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☐ 61. Document ID: US 20040092590 A1

L2: Entry 61 of 81

File: PGPB

May 13, 2004

PGPUB-DOCUMENT-NUMBER: 20040092590

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040092590 A1

TITLE: Glycemic control for prediabetes and/or diabetes Type II using docosahexaenoic acid

PUBLICATION-DATE: May 13, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Arterburn, Linda	Ellicott City	MD	US
Benisek, Diane	Severna Park	MD	US
Hoffman, James	Blue Bell	PA	US
Oken, Harry	Columbia	MD	US
Van Elswyk, Mary	St. Longmont	CO	US

US-CL-CURRENT: [514/560](#); [514/3](#), [514/365](#), [514/592](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC	Draw D
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☐ 62. Document ID: US 20040053379 A1

L2: Entry 62 of 81

File: PGPB

Mar 18, 2004

PGPUB-DOCUMENT-NUMBER: 20040053379

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040053379 A1

TITLE: Method of producing polyunsaturated fatty acids, novel biosynthesis genes, and novel plant expression constructs

PUBLICATION-DATE: March 18, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Lerchl, Jens	Svalov		SE
Renz, Andreas	Limburgerhof		DE

Heinz, Ernst	Hamburg	DE
Domergue, Frederic	Steindamm	DE
Zahringer, Ulrich	Ahrensburg	DE

US-CL-CURRENT: 435/134; 435/252.3, 800/17, 800/281

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC	Draw D
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☐ 63. Document ID: US 20040049805 A1

L2: Entry 63 of 81

File: PGPB

Mar 11, 2004

PGPUB-DOCUMENT-NUMBER: 20040049805

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20040049805 A1

TITLE: Method for the expression of biosynthetic genes in plant seeds using multiple expression constructs

PUBLICATION-DATE: March 11, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Lerchl, Jens	Svalov	MS	SE
Duwenig, Elke	Ludwigshafen		DE
Bischoff, Friedrich	Mainz		DE
Heinz, Ernst	Hamburg		DE
Drexler, Hjordis	Hamburg		DE
Scheffler, Jodi	Oxford		US

US-CL-CURRENT: 800/281; 435/320.1, 435/419, 435/468

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMIC	Draw D
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☐ 64. Document ID: US 20030235880 A1

L2: Entry 64 of 81

File: PGPB

Dec 25, 2003

PGPUB-DOCUMENT-NUMBER: 20030235880

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030235880 A1

TITLE: Carotene synthase gene and uses therefor

PUBLICATION-DATE: December 25, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Weaver, Craig A.	Boulder	CO	US
Metz, James G.	Longmont	CO	US

Kuner, Jerry M.	Longmont	CO	US
Overton, Frank H. JR.	Boulder	CO	US

US-CL-CURRENT: [435/67](#); [435/190](#), [435/252.3](#), [435/320.1](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 65. Document ID: US 20030190733 A1

L2: Entry 65 of 81

File: PGPB

Oct 9, 2003

PGPUB-DOCUMENT-NUMBER: 20030190733

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030190733 A1

TITLE: Desaturase genes and uses thereof

PUBLICATION-DATE: October 9, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Huang, Yung-Sheng	Columbus	OH	US
Das, Tapas	Worthington	OH	US
Thurmond, Jennifer	Columbus	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [435/190](#); [435/134](#), [435/254.2](#), [435/320.1](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 66. Document ID: US 20030177508 A1

L2: Entry 66 of 81

File: PGPB

Sep 18, 2003

PGPUB-DOCUMENT-NUMBER: 20030177508

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030177508 A1

TITLE: Elongase genes and uses thereof

PUBLICATION-DATE: September 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Das, Tapas	Worthington	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Parker-Barnes, Jennifer	New Albany	OH	US

Leonard, Amanda E.	Columbus	OH	US
Thurmond, Jennifer M.	Columbus	OH	US

US-CL-CURRENT: [800/8](#); [435/134](#), [435/193](#), [435/320.1](#), [435/325](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 67. Document ID: US 20030167525 A1

L2: Entry 67 of 81

File: PGPB

Sep 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030167525

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030167525 A1

TITLE: Desaturase genes and uses thereof

PUBLICATION-DATE: September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Das, Tapas	Worthington	OH	US
Thurmond, Jennifer	Columbus	OH	US
Leonard, Amanda Eun-Yeong	Columbus	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [800/281](#); [435/190](#), [435/320.1](#), [435/419](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 68. Document ID: US 20030166207 A1

L2: Entry 68 of 81

File: PGPB

Sep 4, 2003

PGPUB-DOCUMENT-NUMBER: 20030166207

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030166207 A1

TITLE: Product and process for transformation of thraustochytriales microorganisms

PUBLICATION-DATE: September 4, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Roessler, Paul G.	San Diego	CA	US
Matthews, T. Dave	San Diego	CA	US
Ramseier, Tom M.	Poway	CA	US

Metz, James G.

Longmont

CO

US

US-CL-CURRENT: [435/193](#); [435/252.3](#), [435/320.1](#), [435/69.1](#), [435/75](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 69. Document ID: US 20030163845 A1

L2: Entry 69 of 81

File: PGPB

Aug 28, 2003

PGPUB-DOCUMENT-NUMBER: 20030163845

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030163845 A1

TITLE: Elongase genes and uses thereof

PUBLICATION-DATE: August 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Eun-Yeong Leonard, Amanda	Gahanna	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [800/281](#); [435/193](#), [435/257.2](#), [435/320.1](#), [435/419](#), [435/69.1](#), [536/23.2](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 70. Document ID: US 20030161864 A1

L2: Entry 70 of 81

File: PGPB

Aug 28, 2003

PGPUB-DOCUMENT-NUMBER: 20030161864

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030161864 A1

TITLE: Lipid and food compositions containing docosaehexaenoic acid and docosapentaenoic acid

PUBLICATION-DATE: August 28, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Tanaka, Satohiro	Shiso-gun		JP
Yaguchi, Toshiaki	Mishima-gun		JP
Shimizu, Sakayu	Kyoto-shi		JP
Sogo, Tsutomu	Kobe-shi		JP
Fujikawa, Shigeaki	Takatsuki-shi		JP

US-CL-CURRENT: [424/439](#); [435/134](#), [435/41](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
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☐ 71. Document ID: US 20030157654 A1

L2: Entry 71 of 81

File: PGPB

Aug 21, 2003

PGPUB-DOCUMENT-NUMBER: 20030157654

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030157654 A1

TITLE: Biosynthesis of enediyne compounds by manipulation of C-1027 gene pathway

PUBLICATION-DATE: August 21, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Shen, Ben	Verona	WI	US
Liu, Wen	Madison	WI	US

US-CL-CURRENT: [435/78](#); [424/178.1](#), [514/28](#), [536/7.4](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
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☐ 72. Document ID: US 20030157144 A1

L2: Entry 72 of 81

File: PGPB

Aug 21, 2003

PGPUB-DOCUMENT-NUMBER: 20030157144

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030157144 A1

TITLE: Desaturase genes and uses thereof

PUBLICATION-DATE: August 21, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Huang, Yung-Sheng	Columbus	OH	US
Das, Tapas	Worthington	OH	US
Thurmond, Jennifer	Columbus	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: [424/439](#); [435/134](#), [435/190](#), [435/320.1](#), [435/325](#), [435/419](#), [435/69.1](#),
[536/23.2](#), [554/9](#), [800/17](#), [800/281](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw De
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☐ 73. Document ID: US 20030134400 A1

L2: Entry 73 of 81

File: PGPB

Jul 17, 2003

PGPUB-DOCUMENT-NUMBER: 20030134400
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030134400 A1

TITLE: Delta4-desaturase genes and uses thereof

PUBLICATION-DATE: July 17, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Thurmond, Jennifer	Columbus	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Das, Tapas	Worthington	OH	US
Leonard, Amanda Eun-Yeong	Gahanna	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: 435/134; 435/190, 435/254.2, 435/320.1, 435/419, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 74. Document ID: US 20030101486 A1

L2: Entry 74 of 81

File: PGPB

May 29, 2003

PGPUB-DOCUMENT-NUMBER: 20030101486
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030101486 A1

TITLE: Schizochytrium PKS genes

PUBLICATION-DATE: May 29, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Facciotti, Daniel	Davis	CA	US
Metz, James George	Davis	CA	US
Lassner, Michael	Davis	CA	US

US-CL-CURRENT: 800/281; 435/134, 435/193, 435/252.3, 435/320.1, 435/419, 536/23.2, 554/9

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 75. Document ID: US 20030082754 A1

L2: Entry 75 of 81

File: PGPB

May 1, 2003

PGPUB-DOCUMENT-NUMBER: 20030082754

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20030082754 A1

TITLE: Delta4 - desaturase genes and uses thereof

PUBLICATION-DATE: May 1, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Thurmond, Jennifer	Columbus	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Das, Tapas	Worthington	OH	US

US-CL-CURRENT: 435/134; 435/190, 435/254.11, 435/320.1, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 76. Document ID: US 20020194641 A1

L2: Entry 76 of 81

File: PGPB

Dec 19, 2002

PGPUB-DOCUMENT-NUMBER: 20020194641

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020194641 A1

TITLE: PUFA polyketide synthase systems and uses thereof

PUBLICATION-DATE: December 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Metz, James G.	Longmont	CO	US
Flatt, James H.	Longmont	CO	US
Kuner, Jerry M.	Longmont	CO	US
Barclay, William R.	Boulder	CO	US

US-CL-CURRENT: 800/281; 435/193, 435/252.3, 435/320.1, 435/69.1, 435/76, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. De
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☐ 77. Document ID: US 20020170090 A1

L2: Entry 77 of 81

File: PGPB

Nov 14, 2002

PGPUB-DOCUMENT-NUMBER: 20020170090
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020170090 A1

TITLE: Omega-3 fatty acid desaturase

PUBLICATION-DATE: November 14, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Browse, John A.	Palouse	WA	US
Spychalla, James P.	Antigo	WI	US

US-CL-CURRENT: 800/281; 435/190, 435/410

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 78. Document ID: US 20020156254 A1

L2: Entry 78 of 81

File: PGPB

Oct 24, 2002

PGPUB-DOCUMENT-NUMBER: 20020156254
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020156254 A1

TITLE: Fad4, Fad5, Fad5-2 and Fad6, novel fatty acid desaturase family members and uses thereof

PUBLICATION-DATE: October 24, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Qiu, Xiao	Saskatoon	NC	CA
Hong, Haiping	Apex		US

US-CL-CURRENT: 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Drawings
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☐ 79. Document ID: US 20020138874 A1

L2: Entry 79 of 81

File: PGPB

Sep 26, 2002

PGPUB-DOCUMENT-NUMBER: 20020138874
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20020138874 A1

TITLE: Elongase genes and uses thereof

PUBLICATION-DATE: September 26, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Mukerji, Pradip	Gahanna	OH	US
Leonard, Amanda Eun-Yeong	Gahanna	OH	US
Huang, Yung-Sheng	Upper Arlington	OH	US
Pereira, Suzette L.	Westerville	OH	US

US-CL-CURRENT: 800/281; 435/193, 435/320.1, 435/410, 435/69.1, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. D.
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☐ 80. Document ID: US 20020110582 A1

L2: Entry 80 of 81

File: PGPB

Aug 15, 2002

PGPUB-DOCUMENT-NUMBER: 20020110582

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020110582 A1

TITLE: Use of arachidonic acid for enhanced culturing of fish larvae and broodstock

PUBLICATION-DATE: August 15, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Place, Allen R.	Baltimore	MD	US
Harel, Moti	Baltimore	MD	US

US-CL-CURRENT: 424/442; 514/560

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw. D.
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☐ 81. Document ID: US 20020042933 A1

L2: Entry 81 of 81

File: PGPB

Apr 11, 2002

PGPUB-DOCUMENT-NUMBER: 20020042933

PGPUB-FILING-TYPE: new

DOCUMENT-IDENTIFIER: US 20020042933 A1

TITLE: Omega-3 fatty acid desaturase

PUBLICATION-DATE: April 11, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY
Browse, John A.	Palouse	WA	US
Spychalla, James P.	Antigo	WI	US

US-CL-CURRENT: 800/298; 435/419, 435/468

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWMC	Draw De
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Terms	Documents
polyunsaturated fatty acid and (schizochytrium or thraustochytrium) and (gene or dna or cdna or clon\$5)	81

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